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Employer decision-making around skill shortages, employee shortages and migration: Literature Review

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Contents

Summary	3
1. Introduction	9
1.1 Scope of the review	9
1.2 Methodology	9
1.3 Data limitations	10
1.4 Structure of the review	10
2. Overarching themes: employer decisions around skill and employee shortages	12
2.1 What are skill shortages?	12
2.2 Strategies and measures used to address skills and employee shortages	14
2.3 Decision making about the use of migrant labour	22
3. Review of evidence on employer decisions around skill and employee shortages by broad occupational groups at RQF3-5 level	28
3.1 Administrative and secretarial occupations (Major Group 4)	28
3.2 Public service and associate professionals (Minor Groups 356, 331 and 355)	28
3.3 Business associate professionals (Minor Groups 352, 353 and 354)	28
3.4 Health and social care occupations (Sub-major Group 32 and 61 and Minor Group 124)	29
3.5 Other caring occupations	31
3.6 Skilled construction and building trades (Sub-major group 50)	32
3.7 Skilled metal, electrical and electronic trades (Sub-major group 52)	37
3.8 Science, engineering and technical associate professionals (Sub-major group 31)	40
3.9 Culture, media and sports occupations (Sub-major group 34)	42
3.10 Textiles, printing and other skilled trades (Sub-major group 54)	43
3.11 Agricultural occupations (Sub-major group 51 and Minor Group 121)	46
3.12 Other (Sub-major group 11, 12, 54, 62, 71, 81, 82 and Minor Group 351)	47
References	50

Summary

Introduction

This review of available UK and international literature looks at how employers make decisions around skill and employee shortages, and how they trade off factors such as skills, employee availability and pay against each other. It examines strategies and measures employers use, or have used, to address skills and employee shortages, and the success of these strategies and measures. It explores how they trade off factors such as employee skills, availability and pay against each other. In particular, it looks at both the reasons for hiring migrants as a response to skill and employee shortages, and the reasons for not using migration as a response.

The review has a focus on occupations with medium training requirements. These are at Regulated Qualifications Framework (RQF) level 3 to 5 – i.e. approximately A-Level/Highers or equivalent.

The sources searched included academic databases, grey literature and anonymised submissions from stakeholders from the Migration Advisory Committee's (MAC's) call for evidence on roles with medium training requirements that are being filled by migrant workers.

The review revealed that there is limited literature on occupations with medium training requirements (RQF3-5 equivalent) vis-à-vis occupations with both longer (RQF6+, i.e. with training requirements equivalent to bachelor's degree or above) and shorter (RQF 1-2, i.e. with training requirements below A-level/Highers equivalent) training requirements. The available literature often focuses on sectors rather than occupations.

In interpreting the evidence, it is important to keep in mind that employers' responses may be one-sided – focusing particularly on the lack of local labour. Moreover, interpretations of what constitutes a skills shortage varies between employers.

Overarching themes: employer decisions around skill and employee shortages

What are skill shortages?

The concept of 'skill' is ambiguous. It is possible to distinguish between: (1) a technical concept of skill foregrounding cognitive ability and manual dexterity, and (2) a behavioural concept of skill: focusing on the social and personal skills. An employee's skills in the latter category can have a big impact on the ability of the employee to be an effective member of staff. Employers are often looking for a mix of skills. 'Shortage' is an ambiguous term also. It raises the question of 'shortage' in relation to what: whether an employer's current demand, or in relation to some optimal level of skills – now or in the future.

In the Employer Skills Survey¹ (a large survey that gathers information on the skills that employers need, the skills they are short of and the training they offer) skill-shortage vacancies are vacancies that employers struggle to fill due to a lack of skills, qualifications, or experience amongst applicants.

Measures and strategies used to address skills and employee shortages

¹ <https://www.gov.uk/government/collections/employer-skills-survey-2019>;
<https://www.gov.uk/government/publications/employer-skills-survey-2017-uk-report>

Employers face a balancing act of ensuring practical skills are in place for the ‘here and now’ to deal with ‘business as usual’ operations, while also looking ahead to the skills needed for future business development and success in the longer term. The evidence showed that employers deployed several different measures, often together as part of a single strategy, to address skills and employee shortages in the short- and longer term. This reflects the fact that measures may be less effective on their own than as part of a broader package. Management quality, broader organisational culture and business models shape the measures and strategies that employers have adopted. Measures include:

- increasing the intensity and extent of job search to attract a wider pool of applicants;
- adjusting rewards to workers – including through raising wages, adjusting fringe benefits and/ or altering working conditions, in order to make job roles more attractive to existing/ new workers;
- making numerical adjustments to increase the supply of labour available (e.g. through persuading older workers to delay retirement, through recruiting temporary labour to meet peaks in demand, etc.);
- increasing effort/ output from existing workers to help negate the need for additional workers to address shortages;
- improving the supply of skills available – notably through investment in education and training;
- adopting alternative work organisation to help address/ minimise the impact of shortages;
- automation – substituting capital for labour;
- recruiting migrant workers;
- doing nothing.

Raising wages/ increments/ bonuses and/or non-wage benefits – is the “textbook” response to reduce labour or skill shortages. While offering competitive pay may be part of a solution to recruit and retain workers in short supply, on its own it may be insufficient to address the issue of skills and employee shortages.

Adoption of flexible working practices – either through overtime hours and/or using temporary help and/or enhancing recruitment/retention through offering flexible working arrangements – may help address shortages.

Training or retraining to fill positions is a potential solution to shortages, although there are questions about whether this is a viable solution for employers in the case of occupations with medium (or longer) training requirements. For example, apprenticeships may be a medium-term proposition for addressing shortages. Employers may, however, be reluctant to train because of the ‘poaching’ problem.

There is evidence that employers are using a greater range of recruitment methods – with some success – in connecting to a more diverse range of potential applicants. Options include use of agencies, outsourcing, recruiting from the unemployed. Social networking has become increasingly prominent in terms of employers’ reaching out to/targeting new staff. It is used in migrant recruitment, and migrant workers may also be used as recruitment agents.

Work organisation and job (re)design strategies – including implementation of self-directed work groups or problem-solving teams – are possible response to skill shortages.

Automation of tasks is one key way to reduce and/or change the need for labour. In some circumstances, automation can result in efficiency gains. However, in other instances automation is either not viable or is not a cost-effective strategy. The impacts on labour requirements vary according to context, with automation leading to a decreased demand for

labour in some circumstances and a change in skills requirements in others. In some cases, changes in skills profiles might lead to a reduction in demand for roles with medium training requirements (as in the case of some craft roles). In other instances, demand for such roles may increase at the expense of jobs with shorter training requirements – for example, as technician roles relating to systems/machine maintenance and operation become more important while demand for labourers reduces.

Decisions to use migrant labour as a means of addressing skills and employee shortages

The immigration regime provides the context for employers' decisions about the use of migrant labour and how/where it is sourced.

Hiring and use of migrant labour tends to be connected to economic logics that are universal – including labour market conditions locally, nationally and internationally, at the same time as having local firm, size, industry, sector-based and occupational idiosyncrasies. This indicates that sectoral and occupational insights are important. Employers with an international orientation, reflected by an international business strategy and an international workforce, may be particularly likely to recruit workers from abroad.

Human capital factors underpin employer decision-making about migrant recruitment in different ways. First, domestic supply challenges may mean that employers look to migrant workers to address skill shortages. Recruitment of migrant labour may reflect the labour pool of applicants for vacancies. Where there is a lack of applicants, an employer may have little choice but to rely on recruitment of foreign workers – especially if it is an economy-wide shortage, and also in some instances of a regional shortage. Secondly, migrants can be attractive to employers from an innovation perspective, in that they can bring new skills, capabilities and ideas to the organisations.

The relative ease of employing migrants can be a factor in their employment. If recruitment of migrant labour is relatively easy an employer might be less inclined to consider (re)training domestic labour. Network recruitment of migrant labour tends to accentuate existing patterns of workforce composition.

Review of evidence on employer decisions around skill and employee shortages by broad occupational groups at RQF3-5 level

Administrative and secretarial occupations

The review yielded little relevant literature on these occupations.

Public service and associate professionals

The review yielded little relevant literature on these occupations.

Business associate professionals

The literature on business services tended to focus on RQF6+ rather than RQF3-5 occupations. For businesses with an international orientation, there was a need for staff with relevant language skills and business culture knowledge. There is some evidence of workers with higher-level qualifications (RQF level 6 and above) – including migrant workers – trickling down and across to fill occupations with medium training requirements.

Health and social care occupations

Regular workforce planning plays a key role in the NHS, but much of the emphasis to date has been on degree-level occupations. There is a longstanding reliance on migrant labour in these occupations. The new role of a nursing associate (requiring a two-year apprenticeship leading to RQF level 5) is an example of a new entry route designed to alleviate skill shortages.

Employers value migrant workers for what they bring to care work, viewing them as being hard working and having a caring approach to those they care for.

Other caring occupations

The review revealed limited information on these occupations. In the early years sector, there is some evidence that employers have responded to recruitment difficulties most often by recruiting candidates with potential without the required qualifications or experience, and then investing in upskilling. Non-UK workers play a limited role in this sector.

Skilled construction and building trades

Research on the construction and building sector shows that it is a volatile sector, prone to gluts and shortages in demand for workers, who are often employed on a project-by-project basis. Poaching from other firms was by far the most common strategy for addressing skills shortages identified in the literature.

Training to develop the skills pipeline is recognised as part of the solution to skills shortages in the construction sector, but employers have argued that this needs to be seen alongside continued access to migrant workers to provide the flexibility that the industry needs. However, the small size of many employers in the construction sector, the amount of subcontracting and associated self-employment act as disincentives to training.

An assessment of the evidence revealed four key drivers for construction employers to employ migrants:

- The UK-born construction workforce is ageing. Combined with issues with training and apprenticeship programmes and falling birth rates, ageing means that there are structural shortages in the sector;
- Industrialising nations have been growing rapidly, both demographically and economically. This has led to construction booms and an increase in construction workers there. These construction workers are a potential source of labour for construction employers in the UK;
- A trend towards bigger and more complex projects requires a larger pool of labour and skills than local areas can provide;
- Lastly, adoption of modern methods of construction (MMC) makes migrant workers with relevant skills and experience particularly attractive.

MMC strategies are associated with utilisation of pre-manufacturing technologies, digitisation and IT literacy, requiring investment in associated skills for construction workers. They represent one way of addressing skill shortages in the construction sector, while at the same time improving productivity and modernising the sector more generally.

Skilled metal, electrical and electronic trades

Skills shortages in this broad occupational group have tended to arise due to a lack of investment in apprenticeships and other training in the 1980s and 1990s, which had been the traditional route for developing these skills. Fear of poaching also contributed to a lack of investment in training to address shortages. The use of agency workers is common for occupations such as welding.

In-house training to 'grow your own' has become increasingly common for vehicle technicians, mechanics and electricians. There is potential to address skills shortages

through diversifying the workforce, particularly in bringing more women into the sector. However, this relies in part on girls taking appropriate subjects at school.

There was little evidence in the literature of employers recruiting migrants as a deliberate strategy to address a shortage of workers for jobs at RQF3-5 level. When migrants were specifically targeted, this tended to be for RQF6+ level jobs in engineering, where large companies sought talent globally.

Science, engineering and technical associate professionals

Recruiting from the external labour market, apprenticeships and on-the-job task-specific training are ways in which employers of science, engineering and technology associate professionals have addressed skill shortages.

There was considerable evidence of employers recruiting people who were ‘overqualified’ (e.g. people with degrees) for jobs at RQF3-5 level, due to the relative availability of people with who had relevant longer training and associated qualifications, and their willingness to accept employment as a technician. This was particularly the case in laboratory technician roles. In this instance there was little evidence of them crowding out people qualified at RQF3-5 levels. In the case of engineering technicians in the aerospace sector there was some evidence of employers up-skilling people to take on roles with medium training requirements.

There was some evidence of migrants who met requirements for RQF6+ jobs being recruited to technician roles, while at the same time being given some tasks that utilise their RQF6+ skills.

Culture, media and sports occupations

Many of these occupations are resistant to automation, and hence the potential to substitute capital for labour is limited.

Migrant workers play an important role in some occupational niches in this sector. The screen and video game sectors are internationally-oriented and look to non-UK labour to provide language and cultural context input alongside occupational-/sector-specific skills. Similarly, the publishing sector is heavily reliant on international labour for translation professionals (where accurate translation is of fundamental importance for a robust product).

Textiles, printing and other skilled trades

While there was evidence of employment in occupations with shorter training requirements, the review yielded little evidence of migrant workers in occupations with medium training requirements.

Some parts of this broad occupational grouping is characterised by an ageing workforce. Historically, long-term informal apprenticeships and intra-family transmission have been important in the textiles sector. Formal apprenticeships are hampered by the small size of many businesses. Some of the skills required are quite occupationally- or sectorally-specific and are not easily transferrable to other sectors. There is also an image amongst potential recruits that sustainable employment is difficult.

Agricultural occupations

Much of the research on agricultural occupations focuses on labourers and other occupations at RQF1-2 level.

The review yielded some evidence on shortages in specific skilled trades occupations, notably in butchery.

A factor highlighted in submissions to the MAC by agricultural/forestry employers and sectoral organisations as leading to recruitment of non-UK labour for some roles, is that workers need to be based in rural (sometimes remote) locations.

Other occupations

The hospitality and leisure sector is particularly reliant on migrant workers. In the particular case of shortages of chefs, employers have responded by using migrant labour, existing staff working longer hours and use of agency staff. There is recognition that a multi-pronged approach to addressing chef shortages is needed, which includes the use of migrant labour alongside growing a talent pipeline, improving work quality, job redesign, etc.

Costs of training in a sector where there are downward pressures on costs and the time taken to achieve required skills has tended to militate against investment in training, particularly when a supply of migrant labour has been available.

1. Introduction

1.1 Scope of the review

- 1.1 This review of available UK and international literature (both academic and grey literature) looks at how employers make decisions around skill and employee shortages, and how they trade off factors such as skills, employee availability and pay against each other. The particular focus is on employers' responses to a situation 'when there are not enough people available with the skills needed to do the jobs which need to be done' (Green et al., 1998).
- 1.2 The review examines strategies and measures employers use, or have used, to address skills and employee shortages, and the success of these strategies and measures. In particular, it looks at both the reasons for hiring migrants as a response to skill and employee shortages, and for not using migration as a response.
- 1.3 The review has an occupational focus on jobs with medium training requirements. These are at Regulated Qualifications Framework (RQF) level 3 to 5 – i.e. approximately A-Level/Highers or equivalent. The broad occupational groupings covered are shown in Table 1.1.

Table 1.1: Broad groupings of occupations with medium training requirements	
Broad grouping	SOC codes
Administrative and secretarial occupations	Major Group 4
Public service associate professionals	Minor Groups 356, 331 and 355
Business associate professionals	Minor Groups 352, 253 and 354
Health and social care occupations	Sub-major Group 32 & 61 and Minor Group 124
Other caring occupations	Sub-major Group 32 & 61
Skilled construction and building trades	Sub-major group 53
Skilled metal, electrical and electronic trades	Sub-major group 52
Science, engineering and technology associate professionals	Sub-major group 31
Culture, media and sports occupations	Sub-major group 34
Textiles, printing and other skilled trades	Sub-major group 54
Agricultural occupations	Sub-major Group 51 and Minor Group 121
Other - Hospitality & leisure, Other - Retail and wholesale, Other – Energy and environment, Other – Transport, Other – Miscellaneous	Sub-major group 11, 12, 54, 62, 71, 81, 82 and Minor Group 351

1.2 Methodology

- 1.4 The sources searched included academic databases (EconLit, Web of Science, Google Scholar) accessible via university libraries. Hand searching of specific journals was also undertaken. Grey literature sources were searched using Idox and by hand searching sector- and occupation-specific reports (where available). The review also utilised anonymised stakeholder responses and associated reports and attachments submitted to the Call for Evidence on occupations requiring RQF 3-5 qualifications (supplied by the Migration Advisory Committee [MAC]).

1.3 Data limitations

Coverage of sources

- 1.5 There is limited literature on specific skills information for occupations with medium training requirements – in general, the focus tends to be more on sectors (e.g. construction) or type of skill (e.g. technical skill) rather than the specific occupations within them. Where this is the case the sectoral analogy is used.
- 1.6 The literature on skills issues for occupations with medium training requirements is limited, compared with that on occupations with longer training requirements (i.e. RQF level 6 – equivalent to Bachelor's degree and above) and shortage in occupations with shorter training requirements (i.e. RQF1-2, below A-Level/Highers or equivalent).
- 1.7 Strategies often focus on administrative responses, rather than employer decisions – e.g. development of apprenticeship routes, changes to immigration policies – policy and practice responses by governments, industry bodies and so on to create the conditions and mechanisms for addressing skills shortages, rather than employers' decisions to use them.

Issues in interpreting data

- 1.8 When assessing findings from qualitative studies a key issue to keep in mind, specifically with regard to employers' use of migrant labour, is that information from employer interviews can often be one-sided. Scott (2013b) suggests (drawing on his own research in the agricultural and food sectors and on the extant literature) that the focus of employers' responses tends to be on the lack of (appropriate) domestic labour and/or focuses on the rhetoric of the 'good' migrant worker. He notes that in employer interviews, issues around the use of migrant labour to help intensify workplace regimes as part of a conscious attempt to shift power from labour to capital are less likely to be voiced. Likewise, issues concerning the difficulties employers face in terms of paying higher wages given pressures placed on them to cut costs (e.g. from supermarkets in the food industry and from care commissioners in the care sector) are mentioned only occasionally. While these issues are most likely to be apparent amongst occupations with shorter training requirements, they might also apply to occupations with medium training requirements.
- 1.9 Another issue in analyses based on employer surveys is that employers' definitions of 'skills' vary, including according to the respondent's position within the organisation. As discussed in more detail below, shortages/deficiencies often encompass a wide range of employee behavioural attributes such as reliability, motivation, and the need for supervisory guidance, in addition to a shortage of specific technical or occupational skills.

1.4 Structure of the review

- 1.10 The second part of the review presents overarching themes from a general review of the literature on employer decisions around skill and employee shortages. First, it addresses the question: 'what are skill shortages?'. Secondly, it outlines strategies and measures used to address skills and employee shortages. Topics examined include pay and conditions, training and upskilling, recruitment sources and methods, and work reorganisation/job definition, and organisational culture. Thirdly, it reviews decision-making about the use of migrant labour.
- 1.11 The third part of the review presents evidence on employer decisions around skill and employee shortages by broad occupational group. It presents a brief background to

the occupation/sector, followed by a review of mechanisms for addressing skill shortages, plus any information that was found relating to specific occupations.

2. Overarching themes: employer decisions around skill and employee shortages

2.1 What are skill shortages?

Technical and behavioural concepts of skills

- 2.1 A key issue in the literature regarding employer decisions around skill and employee shortages is that the concept of 'skill' is ambiguous (Green et al., 1998). In a seminal paper entitled 'Is there a shortage of skilled labour?' based on hour-long interviews with managers in 73 firms exploring labour shortages, recruitment problems and then skill shortages, Oliver and Turton (1982), concluded that 'skill' is a 'humpty-dumpty' word; it means just what the user wants it to mean. They made a distinction between a technical concept of skill foregrounding cognitive ability and manual dexterity, and a behavioural concept of skill: focusing on the social behaviour of workers within the context of the firm. They termed the latter the 'good bloke syndrome', encompassing reliability, stability of work record, experience and responsibility. It appeared from Oliver and Turton's (1982) study that the 'skill shortages' faced by the employers were not those of applicants lacking or unable to acquire the necessary cognitive or manual ability, but rather a shortage of potential employees perceived as possessing the required behavioural characteristics. While acknowledging the importance of behavioural attributes, noting that in a large number of cases social skills are an important part of the skill said to be in shortage, Green et al. (1998) highlight that they should be seen alongside technical skills in the potential list of qualities that employers are looking for.
- 2.2 Results from the 2017 Employer Skills Survey, based on responses from over 87,000 employers across the UK, provide insights into key factors in the technical and practical skills category underlying skill-shortage vacancies. The most common shortages were for specialist skills or knowledge to perform the role, complex analytical skills and operational skills – including knowledge of products and services offered and/or knowledge of how the organisation works. People and personal skills can have a big impact on the ability of the employee to be an effective member of staff – even for people with the required technical and practical skills. The types of people and personal skills most commonly reported to be lacking were self-management skills, especially the ability to manage one's own time and task prioritisation (Winterbotham et al., 2018).
- 2.3 Indeed, in-depth qualitative research with employers found that what employers tend to place specific emphasis on is a mix of skills – for example, encompassing digital, technological, negotiating and other social and behavioural skills (Lyons et al., 2020).

Concepts of shortage and deficiency

- 2.4 Green et al. (1998) highlighted that 'shortage' is an ambiguous term because it raises the question of shortage in relation to what. It could be a shortage in relation to what employers currently demand, or in relation to some optimal level of skills. Green et al. (1998) suggest that a more apt term for the latter is a 'skills deficiency'.
- 2.5 There is also an important issue about employers' time horizons for planning to address skills needs. Drawing on in-depth work with employers Green and Taylor (2020) pointed to employers' needing to do a balancing act of ensuring practical skills are in place for the 'here and now' to deal with 'business as usual' operations, while also looking ahead to the skills needed for future business development and success.

- 2.6 In empirical work, the conventional measure of shortage relates to difficulties in filling vacancies – and specifically skill-shortage vacancies. The latter are defined in the Employer Skills Survey as vacancies employers struggle to fill due to a lack of skills, qualifications, or experience amongst applicants (Winterbotham et al., 2018). In the 2017 Employer Skills Survey 33 per cent of vacancies were reported as being hard-to-fill vacancies and 22 per cent were skill-shortage vacancies. Reported impacts from skill-shortage vacancies included increased workloads for other staff; loss of business or orders to competitors; delays in developing new products or services; and difficulties in introducing new working practices.
- 2.7 According to Green et al. (1998) a skills deficiency may occur even if there is not a current vacancy. There is also the issue that employers may face shortcomings in the skills of their current workforce. Results from the Employer Skills Survey showed that employers identified three main causes of skills gaps: staff being new to the role, being unable to recruit staff with the required skills, and problems retaining staff. All have increased since 2015 (Green and Taylor, 2020). From an analytical perspective, it is important to note that ‘skill shortages’ are not perceived in a uniform and consistent way by all employers.

The importance of context

- 2.8 Context is important in employer decision-making, and the shape of existing immigration policy is a key part of the context in which employers make decisions. Internationally, as emphasised in a study comparing Sweden and Switzerland (Afonso, 2019), over the longer-term changing gender norms and the development of female labour market participation (including childcare availability, opportunities to work full-time, etc.) vis-à-vis the expansion of foreign labour are important, as is the role of labour market regulation (including occupationally and sectorally). The factors underlying skills deficiencies, their impact on the organisation, and the responses of employers to them are all highly complex and contingent upon a number of factors (Watson et al. 2006). Firm size was a significant determinant in skills-deficiency perception; growing firms had a higher skills-shortage perception.

Recruitment

- 2.9 Relative to many European competitors (including Germany, Italy, Belgium, the Netherlands and France), there has been a tendency in the UK to recruit rather than train (Lyons et al., 2020). This was the case even though the percentage of skill-shortage vacancies reported by employers has remained at 22 per cent or above since 2013.
- 2.10 Availability of labour/potential recruits is key: in the face of a shortage of ‘ideal’ applicants there are trade-offs between different worker attributes – for example, English language difficulties may be traded off against willingness to work hard and learn. Availability/willingness of (potential) employees to work flexibly is an important consideration in factors traded off.
- 2.11 When hiring a new worker an employer faces a choice of recruitment strategy. Choices and trade-offs depend on search costs and frictions, with employers being more likely to use trade-offs when search and opportunity costs of an unfilled vacancy are higher. Analyses of US data from a voluntary survey from 1981 and Slovenian administrative data on vacancies from 2001 showed that an employer was more likely to fill a job vacancy by hiring an under-qualified worker in three circumstances. First, when search costs were higher. Secondly, when at the start of the search there was less time to search at low cost (perhaps because an existing worker leaves quickly). Thirdly, during the week following an increase in search costs (Brencic, 2010).

- 2.12 These findings contrast with earlier analyses of Dutch vacancy data sets that showed that the likelihood of hiring an under-educated worker does not increase as the employer's search progresses (van Ours and Ridder, 1991). Further analyses of Dutch vacancy data found that employers responded to higher search costs by making adjustments to search effort, using a greater number of recruitment channels (van Ommeren and Russo, 1997).
- 2.13 Insights into different recruitment channels used by employers are provided in analyses of informal and formal employer recruitment strategies for clerical workers drawing on a cross-sectional telephone survey of 3510 establishments in four US metropolitan areas in 1992-95 using a dynamic, discrete choice structural model (DeVaro, 2008). Informal methods generated a small but select pool of applicants from which an employer could hire quickly, while formal methods created a large but less select applicant pool. The analyses showed that employers were more hesitant to raise wages offered during the search process in an attempt to fill a vacancy when using informal methods (since they were less eager to attract candidates of more uncertain quality) than those using formal methods. It should be borne in mind that some of these studies used data predating extensive use of the internet for job search, but the principles of making trade-offs on different dimensions – such as qualification level of the recruit and/or search effort – remain valid.

2.2 Strategies and measures used to address skills and employee shortages

Introduction

- 2.14 A number of strategies (other than forward planning and migration – both of which are considered separately below) were identified to address these skill and employee shortages (see Table 2.1).

Table 2.1: Types of strategies and measures to address shortages	
Strategy	Measure
Adjusting rewards to workers	Raising wages, Raising/ adjusting fringe benefits, Altering working conditions
Numerical adjustments to labour supply	Recruiting young people, Delaying retirement of older workers, Facilitating re-entry to the labour force – e.g. of women (including through flexible work practices), Recruiting immigrants, Use of non-standard employment practices – e.g. sub-contracting, temporary help
Increasing effort/ output from existing workers	Increasing hours of work, Increasing intensity of work/ discretionary effort of existing personnel
Improving quality of existing labour supply	Education and training (to enhance human capital), Importing skills
Adopting alternative work organisation	Problem-solving teams, self-directed work groups
Automation	Substituting capital for labour

Recent UK evidence

- 2.15 Evidence from the 2017 Employer Skills Survey showed that the vast majority (87 per cent) of establishments that had difficulty filling vacancies had taken action to help

overcome these difficulties (Winterbotham et al. 2018). The most common actions taken related to altering recruitment methods, either through increased recruitment spend (41 per cent of establishments with hard-to-fill vacancies) or using new recruitment methods (33 per cent of establishments with hard-to-fill vacancies). This is indicative of more intensive search.

- 2.16 Redefining existing jobs was the third most common action taken by employers who had difficulty filling vacancies (14 per cent). In contrast to altering recruitment methods, redefining jobs was a more common response for small than for large establishments. 9 per cent and 8 per cent of establishments, respectively, increased training of existing staff or expanded trainee programmes. 8 per cent reported contracting out work, 8 per cent reported increasing salaries and 5 per cent volunteered (unprompted) that they recruited non-UK nationals. However, when prompted 38 per cent of establishments with hard-to-fill vacancies reported seeking to recruit non-UK nationals to fill hard-to-fill vacancies. This was a more common than average response in Transport and Storage, Wholesale and Retail, Construction and the Primary Sector and Utilities, in London and in large establishments.
- 2.17 11 per cent of employers that had hard-to-fill vacancies reported that they had not taken any action in response to facing these recruitment challenges. Not taking action was much more common among small establishments than larger ones and was most prevalent in Transport and Storage (17 per cent), followed by Wholesale and Retail (16 per cent), Construction (16 per cent), and Primary Sector and Utilities (15 per cent).

Pay and conditions

- 2.18 Raising wages/increments/bonuses and/or non-wage benefits is the “textbook” response to reduce labour or skill shortages. However, there may be issues about such a strategy disrupting pay levels/differentials amongst incumbent workers, which may cause issues for the company concerned in the longer-term. However, enhanced conditions were an element of a broader approach (along with providing information about possible opportunities for partners) used in the health sector to attract applicants in the rural area of Dumfries and Galloway in the context of a lack of applicants (Hollywood and McQuaid, 2007). In sectors such as agriculture and food, downward pressures on costs exerted by supermarkets can mean that it is difficult for employers to raise wages. In jobs which are low-paid and unattractive to domestic UK labour a response is to turn to migrant labour.
- 2.19 In the manufacturing and construction sectors there is evidence of poaching driving up the costs of recruitment and wages (for example, Lewis, 2013; Mason, 2012). In the automotive sector, the Automotive Council (2013) drew attention to workers with required skills being drawn from lower down the supply chain; the attraction for the workers being higher pay rates and more prestigious work (see also Atkinson and Hargreaves, 2014). In sectors such as car servicing there was evidence of fear of poaching leading to a reluctance to take on apprentices (Grollmann et al., 2017). Hence, fears that investment in training will not be recouped can lead to under-investment in training in aggregate. There is therefore a need for policies and practices in place to ensure that once apprentices have finished their training they are retained by the employers that have invested in them (Gambin and Hogarth, 2016). Gambin, Hogarth, Winterbotham et al. (2016) suggest that one strategy that employers can adopt to obviate the risk of poaching is to bundle training in the ‘company way’. This means that it is exclusive to the employer’s workplace (i.e. as firm-specific as possible) and less readily transferred to other workplaces, so enhancing the likelihood that apprentices will stay. The authors noted that employers that successfully retain their

apprentices often mentioned that they used a variety of HR and workplace practices to ensure apprentices stay with the company.

- 2.20 Offering competitive pay may be part of a solution to recruit and retain workers in short supply in the short term, but on its own it may be insufficient in the longer term. Findings and policy implications from a study of multinational logistics companies in China involving interviews with executives in global logistics companies and with Chinese supply chain candidates illustrate this point. The companies sought local management staff in China and faced greater than expected difficulties in attracting and retaining them in the face of business expansion (Shi and Handfield, 2012). The reasons for the difficulties faced were a shortage of qualified candidates, the relative unattractiveness of the roles in multinational logistics enterprises given other options available and a mismatch between expectations of foreign managers and potential Chinese candidates for the roles about what constitutes a competitive salary and benefits. Solutions to this challenge suggested by the authors include creating training opportunities for HR managers on Chinese culture and social contexts establishing fair incentives internally and seeking deeper and broader relationships with Chinese universities to attract talent.
- 2.21 Also highlighting the fact that pay on its own cannot address labour and skill shortages, a large-scale systematic appraisal amongst health professionals, managers and administrators employed by the NHS of the relative importance of drivers of employee exodus showed that pay alone was ranked lower than predicted. However, it has a role to play in the reward-effort imbalance as a result of rising job demands, which emerged as the primary factor in the analysis (Weyman et al., 2019). Hence pay may be one measure in the context of others.
- 2.22 Case study evidence from hotels and resorts in Eastern Australia showed that larger foreign-owned organisations adopted a number of approaches involving linking skills to pay in the face of skills shortages. Higher pay was one method used for skilled staff whose expertise was hard to obtain (Cairncross and Kelly, 2008). Another strategy involved an increment for formal and informal skill attainment, as part of wider job performance and remuneration policies adopted as part of a more formal approach to employee recruitment and retention.
- 2.23 Use of government wage subsidies to employers, where available (e.g. to employ younger workers and train them; or for older workers), is another strategy for altering labour supply. The rationale for wage subsidies is to encourage hiring or retention of certain sub-groups to compensate for the gap between pay and productivity involved in employing them. Some evaluation evidence indicated that wage subsidies are not so successful for older workers; rather, analyses using natural experiments suggests that the focus should be on removing incentives for early retirement and increasing the employability of older workers. Drawing on evidence from selected wage subsidy analyses internationally, only large and properly-targeted subsidies can be expected to have substantial effects, limiting their cost-effectiveness (Bookman, 2015).

Enhancing numerical flexibility

- 2.24 Adoption of flexible working practices – including overtime hours (at least as a time-limited solution), flexible part-time working, and more flexible working can aid retention. Analyses by Fang (2009) using data from the Workplace and Employee Survey, a nationally representative sample of Canadian organizations, suggests that employers respond to labour and skill shortages in a number of ways. However, there was a specific focus on short-term and less costly solutions, such as adoption of flexible working hours and increases in overtime hours. Other solutions involved greater

reliance on flexible job design and part-time workers, and implementation of practices designed to improve efficiency in the workplace including use of problem-solving teams and/or workers collaborating to address challenges that they faced in producing goods/delivering services. From this analysis there was no evidence that workplaces would raise employee wages or fringe benefits to alleviate shortages, or spend more on training.

- 2.25 Increasing the supply of labour through temporary help, thereby enhancing numerical flexibility, is one possible solution to address changing labour supply needs while containing overall costs. Deploying a two-sector model in which permanent and temporary (secondary) sectors are presented as distinct labour market segments, Golden (1996) found that fluctuation in industrial output, intensified foreign competition, the relative magnitude of non-wage labour costs and the extent of paid time off were all positively associated with temporary employment. The results more strongly support 'employer strategy/opportunity' as an explanation for an increase in temporary help, rather than worker preferences for temporary employment. Earlier analyses showed a similar result (Golden and Applebaum, 1992).

Training and upskilling

- 2.26 Some employers have used training or retraining to fill positions, although issues identified in relation to this, included timescales (whether these are long enough for training to be a viable strategy to meet needs), the ease of securing suitable training, and also whether subsequent vacancy back-filling was possible (Lyons et al., 2020). A review of the literature on skills mismatches (Gambin, Hogarth, Murphy et al., 2016) noted that training a greater number of people is viewed as a medium- to long-term solution to shortages. The authors found that some employers had concerns about finding and resourcing training that met their requirements. Also, employers may be reluctant to train because of the 'poaching' problem – i.e. they may face difficulties in retaining workers that they have trained, because other employers that do not invest in training may pay a wage premium to attract such workers (as noted above). There is also a 'double pay' problem – i.e. employers pay for specific training and some generic training, and then have to pay a wage premium to encourage them to remain rather than leave (Fang, 2009). However, analysis of an employer survey on skill shortages across all sectors in Dorset showed that in response to a perceived skills deficiency problem, just over half (50.3 per cent) of the respondents reported that additional training would be introduced. This response was substantially higher than for other policies, such as increasing wages and improving working conditions (17.9 per cent). Over two fifths of respondents reported that they either did not know how the firm would respond or that the firm would just work around the difficulty (42.1 per cent for the latter) – which may result in not taking advantage of new market opportunities. It also showed that both a training-evaluation policy and a focused training policy significantly reduced the odds of reporting current skills shortages (Watson et al., 2006). This result is consistent with the view that some employers have successfully used internal training to avoid skills deficiency problems. Putting training in place might mean that shortages are less likely to occur. In turn this means that training solutions would not be identified as a response to skills shortages because the shortages would not arise in the first place.
- 2.27 As a policy strategy, the evidence suggests that apprenticeships are generally well regarded, especially at higher levels, in the UK (Lyons et al., 2020). Analyses of skill shortages in Germany using data from the German Establishment Panel covering the period from 2007 to 2012 found apprenticeships and further training served to reduce the number of skilled vacancies, while retaining older workers or recruiting foreign workers was less successful (Belman and Hubler, 2014).

- 2.28 However, there are some sectors where research has found that apprenticeships are less well regarded. For example, the business services sector traditionally has fewer apprentices than firms in other sectors, and a greater share of skills at a higher level. A study examining apprenticeship take-up amongst business services firms in Germany and the Netherlands found that in Germany apprenticeship qualifications did not fit with firm requirements, while in the Netherlands there was no preference for apprentices over full-time education leavers (Smits and Zwick, 2004). In England there is emerging evidence that the trend towards co-design of apprenticeships with the sector and expansion of higher and degree level apprenticeships is seen as positive by employers in the professional and business services sector as a way of broadening their recruitment base and helping obviate future skill shortages (Riley et al., 2020).
- 2.29 Employee involvement can play an important role in upskilling the labour force and helping innovation. Analyses of the Skills and Employment Survey 2017, a nationally representative survey of working adults aged 20-65 years in Great Britain, found that employees of all kinds can come up with ideas about improving products and processes. The evidence suggests that the strength of employee involvement and the nature of workplace support are strongly associated with employees' willingness and ability to come up with new ideas (Felstead et al., 2020).

Recruitment sources and methods

- 2.30 Employers use a range of search methods to connect with a range of potential applicants. One method is the use of intermediaries/agencies to help with recruitment to address skills shortages and to deal with 'bureaucracy' for recruitment of both UK and non-UK nationals. Agencies connect flexible labour market structures and migrant labour (McCollum and Findlay, 2018). They play a prominent role in the USA (Anderson, 2019) and Europe (Andrijasevic and Sacchetto, 2017). Their existence increases the options available to employers. Employers can contract with temporary work agencies (which may also provide training to workers and broader recruitment services to employers) to supply part of their workforce as a medium- to long-term strategic alternative to direct employment.
- 2.31 A case study of an IT company showed how fixed-term contracts and agency workers were used to source dated skills relating to older technologies and skills in 'cutting-edge' technologies (where there is a considerable skill shortage in the UK) (Purcell et al., 2004). The study also showed that this strategy enhanced workforce flexibility, enabling the company to staff projects in a fluctuating market for their services. A companion study focusing on a hospital outlined how increasing reliance on agencies for bank nurses was not part of a planned and considered labour force strategy but was used because of the scale of the recruitment and retention problems for nurses in the health service.
- 2.32 However, there are instances where employers are dissatisfied with the services of agents/labour providers. In a study of the agribusiness sector, Findlay and McCollum (2013) show that during the 'Boom Years' of 2006-2007 many employers actively engaged in direct overseas recruitment themselves, rather than rely on agencies; they were able to do so successfully and saved costs. Hence macroeconomic context matters.
- 2.33 Outsourcing in the "gig economy" (defined here as an online labour market [i.e. a digital platform] that facilitates trade in tasks with global workers) is another way of meeting demand for labour and skills. This approach involves fragmenting production/services into tasks and coordinating with individual online contractors at arm's length. Analysis based on employer data covering a period from 2008 to 2010 taken from a specific

online platform showed that of over 80,000 employers (mainly in the USA) who posted job vacancies, 63 per cent of employers did not hire a worker when first posting a job vacancy (Stanton and Thomas, 2019). 35 per cent of employers in the data set posted a vacancy and made a hire but did not use the online platform subsequently. 25 per cent of employers in the data set adopted the hiring technology (i.e. they hired at least once and returned to post additional tasks). The vacancies included on the online platform covered a range of jobs, of which web development and administrative support were the most common. Employers with prior hiring experience were twice as likely to fill a vacancy compared to employers who had not hired before. A reasonable inference from these results is that employers concluded that hiring in the gig economy via an online platform did not meet their needs.

- 2.34 In order to address a lack of applicants in the health sector in the rural area of Dumfries and Galloway, Hollywood and McQuaid (2007) highlighted how strategies included extending the geographical reach of the recruitment process (to other areas in the UK). Use of the internet for job search and the web-based gig economy also facilitates extension of geographical reach.
- 2.35 Some employers have looked to recruit from the unemployed, or those about to be made redundant (a source in times of lay-offs); however, there has also appeared to be some unwillingness to recruit from the long-term unemployed, i.e. those with a lack of recent work experience. Evidence from a field experiment conducted in Sweden involving sending 8,466 fictitious job applications, with varying experiences of unemployment and work, to employers for vacancies in 12 occupations, provides insights into employers' decision-making in the early stage of the hiring process, with particular reference to applicants' experience of unemployment (Eriksson and Rooth, 2014). Seven of the 12 occupations were categorised by the researchers as medium/low skill jobs – including installation, maintenance and repair occupations; construction labourers and carpenters; and bus, truck and taxi drivers; and five were categorised as high skill jobs (including nurses). The results showed that employers did not perceive short-term contemporary unemployment spells negatively, suggesting that employers realised that the matching process takes time. However, contemporary unemployment spells lasting at least nine months were perceived negatively for medium/low skill workers – so suggesting a stigma effect. There was no such negative effect for high skill workers. Long-term spells of unemployment in the past did not matter for employers, so suggesting that subsequent work experience eliminates this negative signal. The results suggest some difference in hiring strategies according to skill level, but they cannot provide separate insights into the position for medium skill workers.
- 2.36 Social networking has become increasingly prominent in terms of employers' reaching out to/ targeting new staff, and also in migrant recruitment. This may disadvantage the unemployed. Social networking has been shown to be a longstanding practice amongst minority ethnic entrepreneurs seeking co-ethnic labour (Bloch and McKay, 2015). Evidence from the USA also points to the role of migrant entrepreneur subcontractors in drawing in migrants and securing them jobs (Blue and Drever, 2011). There is evidence that this is important at all occupational levels, including for engineering and scientific roles in high-technology companies in Silicon Valley (Alarcon, 1999).
- 2.37 The use of existing workforce as recruitment agents (including migrant workers) can yield positive results. There are various reasons why employees might use employee referrals. First, a firm may simply want to hire people who are similar to the employees it already has. Given the 'homophily' property of social networks (i.e. the fact that an individual's social networks tend to contain similar individuals), a firm can take

advantage of its existing workforce to find other people with similar characteristics. Second, current employees might reach potential employees who would not respond to conventional recruitment channels. Third, current employees can potentially let applicants know whether they are a good match. Fourthly, they may offer credible information to their employer about whether a potential employee is a good match (Jackson, 2008).

- 2.38 Part of the value of migrant workers' as recruitment agents may stem from the fact that they may be active in local and global labour markets. Janta and Ladkin (2013), drawing on findings from a wider mixed-methods study of Polish migrant workers in the hospitality sector in the UK, showed how migrants in the UK become involved in worker-driven recruitment. They had responsibility for choosing appropriate methods for attracting workers, selecting them, and subsequently facilitating settlement. Via social media they could create and share information easily. In terms of costs saving and generating trust this approach suits both the employer and the migrant worker. Likewise, McCollum and Apsite-Berina (2015), drawing on research on migration from Latvia to lower-wage jobs in the UK, highlight how social networks are an attractive recruitment channel from the perspective of both migrants seeking employment and employers seeking employees. For migrants, informal networks of other migrants represented a quick, trustworthy and effective way of securing employment. For employers, migrants represented a fast, free, convenient and reliable means of sourcing workers with appropriate attributes. A study of recruitment in 971 firms in southern Denmark also highlighted the importance of networks in the recruitment of foreign labour (Schmidt and Jensen, 2012). Likewise, a study exploring employers' recruitment strategies in Ireland when boom labour market conditions prevailed illustrated the importance of mutual trust between employers and employees when the former used the latter to facilitate recruitment (Moriarty et al., 2012). A possible downside of this approach of using the existing workforce as recruitment agents is that employers do not consider the entirety of the available labour pool. Moreover, they are vulnerable to having a key recruitment channel cut off if the migrants used as recruitment agents leave their employment and/or provide negative information about them.
- 2.39 Other research from the agriculture sector in Sweden highlights the importance of existing business networks (i.e. networks of firms in the same sector) in recruiting labour in the context of internationalisation of the labour force (Stenbacka, 2019). This is because other farmers can recommend individuals with the right skills who need a job.

Work reorganisation/ job redefinition

- 2.40 Job (re)design – including implementation of self-directed work groups or problem-solving teams – is one possible response to skill shortages, probably alongside cross-functional training. Flexible job design, problem-solving teams, and self-directed teams may yield productivity gains through synergy and increased efficiency (Fang, 2009). Analyses by Fang (2009) using Canadian data suggest that this is a structural, rather than a short-term response to shortages. The analyses also highlight significant complementarities between technological innovations and workplace practice innovations, and that competition and foreign ownership are important determinants in their adoption. This suggests that such innovations are more likely to be adopted in foreign-owned companies.
- 2.41 In some circumstances employers recruit graduates who are more highly qualified than is necessary for the job tasks involved (Lewis, 2013). In such cases there is potential for an employer to redesign the job concerned to separate out more and less complex

tasks and to exploit graduate level skills in undertaking the former. However, this in turn can inhibit skills development of workers undertaking the less complex tasks (Maso, 2013; Diamond et al., 2011).

- 2.42 Outsourcing is another strategy. This includes outsourcing to the gig economy (especially where there is scope to separate tasks), but also it can include outsourcing entire functions. This latter strategy can change the nature of skills required in the UK (e.g. if certain technical skills are outsourced outside the UK, there may be a greater emphasis in the UK on generic and consultancy skills [Green and Taylor, 2020]). It is difficult to estimate how many employers use the gig economy and there are no official statistics on this. Survey research focusing on workers indicated that the number of people in the UK working for online platforms at least once a week increased from 4.7 per cent of the adult population to 9.6 per cent between 2016 and 2019 (University of Hertfordshire, 2019). The definition used was a broad one, encompassing undertaking paid tasks via a website or 'app' accessed via a laptop, smartphone or other internet-connected device. The majority of the people did such work to top-up other income.

Automation

- 2.43 Automation of tasks (through capital investment) is one strategy to reduce and/or change the need for labour. Agriculture is one sector where automation has been used to decrease the number of jobs (Gindele et al., 2016). In construction, automation has potential in the long-term to substitute for repetitive and physically demanding aspects of work, as in the case of bricklaying (Pegden, 2019). Ideally, automation will result in efficiency gains. However, there are roles that are resistant to automation, as in the case of many occupations in the cultural sector (Bakhshi et al., 2017). There are instances where automation is either not viable or is not a cost-effective strategy, as in the case of some aspects of butchery where machines are less dextrous than humans in cutting carcasses of differently sized and shaped animals.
- 2.44 The impacts of automation on labour requirements vary according to context. In some circumstances automation leads to a decreased demand for labour (i.e. capital is used as a substitute for labour). However, in most circumstances automation leads to a change in the types of skills demanded. In some instances, changes in skills profiles might lead to a reduction in demand. This is the case regarding mechanisation in the textile, weaving and knitting industries. Roles with shorter training requirements are most at risk (Richards-Carpenter, 2016). Those with medium training requirements are also vulnerable, as in the case of many craft roles, with the exception of those that are most niche (Bertram, 2017). In other instances, demand for roles at RQF3-5 level may increase at the expense of jobs with shorter training requirements – for example, as technician roles relating to systems/machine maintenance and operation become more important while demand for labourers reduces. Automation often increases the demand for digital skills, as in the case of modern methods of construction (Davies et al., 2018).

Organisational culture

- 2.45 Management quality (of managers and the broader institutional culture) is central to shaping the opportunities made available to, and the incentives for, employees to participate in skills development and to utilise their skills in the workplace (Lyons et al., 2020).
- 2.46 Case study evidence drawing on interviews with managers and migrant workers showed that employers using large numbers of migrant workers in jobs with shorter training requirements adopted a 'hard' human resource management (HRM) strategy,

in which workers were seen as a resource that needed to be controlled to achieve the highest profit and a competitive advantage. There was a dissonance between maintaining a competitive advantage based on low labour costs, and retention of highly committed workers with a strong work ethic (Forde and MacKenzie, 2009). Other studies of low-skilled migrant workers have highlighted a similar approach (Fitzgerald, 2007; Holgate, 2005). A 'soft' approach to HRM focuses on competitive approaches that are reliant on the human resource attributes of the workforce. The employer in this study used informal methods of recruitment, particularly social networks of existing workers and members of the local community, as a means of attracting workers with similar characteristics (particularly a strong work ethic and high levels of motivation) to the current workforce, supplemented by formally advertising vacancies to the general public. The company's ability to maintain an attachment to a 'low wage long hours' strategy, using a hard HRM strategy, was facilitated by the expansion of the European Union and the increasing availability of migrant workers. This meant an ongoing supply of migrant workers, alongside ad hoc responses to high levels of turnover.

2.3 Decision making about the use of migrant labour

The immigration regime

- 2.47 The immigration regime is a key determinant in shaping decision-making about the use of migrant labour. There is a classic distinction between 'demand-driven' and 'supply-driven' selection of migrant labour. In demand-driven migration, demand from employers, in the form of a job offer, is a precondition for eligibility. Under 'supply-driven' migration, by contrast, no job offer is required; authorisation to work is given directly to the individual on the basis of their characteristics, and they then find a job. Sumption (2019) notes that an employer sponsorship (i.e. a demand-driven) approach to immigration in skilled roles gives employers more power over their workforce because it is difficult for the worker to move to another job. Hence, it reduces the bargaining power of migrant workers in the labour market and so puts downward pressure on their wages and increases the risk of labour exploitation. Disadvantages of the demand-driven approach is that it increases the administrative burden associated with hiring migrant labour. It may also curtail employers' ability to select migrant workers when employer sponsorship is restricted to certain industries and occupations. She suggests that the implication is that a demand-driven approach is likely to improve the skill composition of labour migrants, but reduce the total number of skilled workers admitted. By contrast, the supply-driven approach involves less bureaucracy, but has the disadvantage that workers may be lost to other employers.

Insights from human capital theory

- 2.48 Human capital theory perspectives suggest that human capital factors underpin employer decision-making about migrant recruitment in three ways. The first is human capital supply challenges (i.e. to address skill shortages). The second is innovation (i.e. to bring new skills, capabilities and ideas to the organisation). The third is cost effectiveness (i.e. to attract and retain employees with valuable human capital at an economic discount relative to competitors). The relative importance of these factors was tested in analysis of a survey of 1,602 employer respondents who sponsored temporary skilled visa holders in Australia in 2012 (Wright and Constantin, 2020). The findings showed that employers recruit higher skilled immigrants to address vacancies for jobs with longer training requirements. However, respondents across all industries other than education and training were more likely to cite interpersonal competencies (such as strong teamwork and people management skills, and personality and values) as important rather than hard skills (measured as recognised qualifications, unique specialisation, and unique industry experience) when assessing skilled migrants for recruitment. Accommodation and food services, construction, and manufacturing in

particular were especially likely to cite interpersonal competencies. Organisations may seek to bring in new skills, capabilities and ideas that are not currently present within the organisation, but which may help it to attain a human capital advantage over its competitors. Innovation-oriented rationales (i.e. bringing in new skills, capabilities and ideas not currently present in the organisation) provided relatively weak motivations for employers recruiting temporary sponsored migrants. There were exceptions in other services, professional, scientific and technical services, and in education and training, where employers perceived temporary sponsored skilled migrants as moderately important for knowledge transfer. In terms of cost-effectiveness, the survey analysis reveals that relatively low pay in industries such as accommodation and food services, manufacturing and construction makes temporary sponsored skilled migrants an attractive solution for employers in these industries to address their skills needs.

Mechanisms affecting employers' recruitment of migrant labour

- 2.49 It is possible to distinguish two sets of mechanisms that affect a strategy of recruiting labour from abroad. First, there are internal mechanisms: an international orientation, reflected by an international business strategy and an international workforce may affect recruiting abroad. Multi-national enterprises are likely to recruit abroad because their business structure requires personnel to operate across establishments in a range of countries. International recruitment and circulation of staff internationally transfers knowledge and helps foster a global business culture. Moreover, in such enterprises the human resource infrastructure (i.e. tools and capacities) is likely to exist to recruit abroad. Foreign ownership, a high level of exporting and a high share of foreign workers in the workforce may also be hypothesised to be positively associated with recruitment from abroad. Second, there are external mechanisms, including labour market conditions – such as high demands for skilled labour or low levels of supply – that might lead to recruitment from abroad. For firms operating in very competitive markets raising wages may not be an option; hence recruiting from abroad might be an attractive strategy in order to keep wages low.
- 2.50 Empirical analysis by Bossler (2016) based on data from a large German establishment level survey, tested associated hypotheses:
- Foreign ownership is associated with recruiting abroad;
 - Exporting firms are more likely to recruit internationally;
 - In the presence of a high share of foreign employees, employers are more likely to use foreign labour markets for recruiting;
 - Employers reporting a high demand for skilled labour are more likely to recruit abroad; and
 - Regional scarcity of labour is associated with recruiting abroad.

Results from regression modelling reveal that the share of foreign workers in the workforce enhances recruiting abroad. They also show that internationally operating businesses more likely recruit from abroad. The modelling results also indicate that regional scarcity of labour and a high demand for skilled labour affects the employer's decision to recruit abroad.

Sector-based insights

- 2.51 Hiring and use of migrant labour use tends to be connected to economic logics that are universal, at the same time as having local firm, size, industry, sector-based and

occupational idiosyncrasies (Scott, 2013c) – hence the value of employer insights on local specificity (for example, see Anderson and Ruhs, 2010).

- 2.52 Results from a study of migrant workers in small London hotels utilising mixed methods study and drawing on a survey of 155 hotel managers and 51 in-depth interviews (Markova et al., 2016) underscored the value of detailed intra-sectoral insights. The study found that where employers sat in terms of the relative weight, they gave costs compared to competences when recruiting varied between hotels in the same city. Hospitality, along with construction and food and drink, is one of the sectors where use of migrant workers is longstanding, particularly to meet employers' needs for a flexible labour force (Rolfe, 2017).
- 2.53 Some industries have features that are conducive to the recruitment of migrant workers. Construction is one such industry. Fellini et al. (2017) notes that it is a labour-intensive industry where labour shortages are increasing. It produces mainly immobile products: production sites are immobile, so workers have to be mobile. Moreover, the sector is characterised by a fragmented production process, dominated by small and medium sized companies and a subcontracting model. From analysis of interviews in each of six countries (including the UK) with relevant institutional actors, 72 employers and human resource managers in large and medium sized companies, they concluded that decisions to recruit foreign workers were guided by two main (interconnected) aims: coping with labour shortages and minimising costs. They found that foreign workers were recruited either from abroad, from a pool of foreign workers already in the country – either directly or indirectly via subcontractors, or through their own internal labour market.
- 2.54 In the UK food industry Scott (2013a) posits that recruitment at the bottom of the labour market is not just about getting people into jobs with shorter training requirements, but rather about getting the right kind of people into jobs. Hence labour shortages are an issue of quality as well as quantity. As a result, a hiring queue is created, in which employers order different but competing groups of prospective workers according to their perceived employability. He found that low-wage employers' preferred recent migrants from Central and Eastern Europe because of their willingness to work for low wages in jobs below their qualification levels, and had a prejudice towards potential domestic workers who were perceived as less willing to take low-paid jobs and having a poorer work ethic (Scott, 2013a, 2013b).
- 2.55 There is a good deal of case study and qualitative research indicating that employers studied perceived migrant workers to have a better work ethic than native workers (for example, see MacKenzie and Forde, 2009; Tannock, 2013). Reviewing the extant literature accounts of why businesses employ migrant workers shows that employers are focused on the perceived qualities (or lack thereof) of workers, with businesses naturally concerned about accessing the best quality workers at the lowest possible cost (Scott, 2013a). In a study examining the ethnic division of labour on Norwegian construction sites, Friberg (2012) found that Polish migrants and their particular 'work culture' (i.e. hard working and well-suited to manual tasks in construction where they were told what to do) were perceived by Norwegian employers as being well-suited for work in the firms' temporary external workforces. However, Polish migrants were considered unfit for permanent positions unless they assimilated to a 'Norwegian work culture', characterised by greater freedom and more responsibility to get tasks done without being told what to do. This was because employers believed that they would lack the independent thinking and autonomous decision-making they were looking for in these roles, meaning that Polish workers could find themselves at the back of the recruitment queue for such jobs, while being in high demand for less autonomous, lower-skilled work – despite their skill levels. The literature review found fewer attempts

to measure work ethic in quantitative terms. Analyses of absences using Labour Force Survey data revealed that when A8 migrant workers first arrive in the UK, they record substantially lower absence than native workers (Dawson et al., 2018). This lower rate is interpreted as indicative of a good work ethic. The analyses also showed that these migrant absence levels assimilated within two to four years, so indicating that a good work ethic might be a time-limited phenomenon.

Network recruitment of migrant labour: rationale and implications

- 2.56 Discussing developments in the use of immigrant labour in the USA, Rodriguez (2004) notes that a key economic advantage of employing immigrants is acquiring a self-regulating and self-sustaining labour supply; one that is self-recruiting, self-training, and self-disciplining. He notes that many employers – in both primary and secondary labour markets – have developed a penchant for foreign workers. Consequently, transnational structures of immigration have emerged and expanded across US local areas. This suggests that once in the habit of recruiting in a particular way, this becomes a norm.

- 2.57 Moriarty et al. (2012) described how in a booming labour market in Ireland, immigrants became the employees of choice, not least because of issues of costs and obedience, but also because they brought new skills, in particular soft skills. Indeed, employers in some sectors developed a categorical preference for migrant workers as they recruited for attitude, work ethic and potential.

- 2.58 Frank (2018) argues that practices that drive the employment of migrants in occupations with shorter training requirements (highlighted by Forde and Mackenzie, 2009) have also diffused to firms that employ high-skilled migrants from India and China. He argues that managers tend to continue to recruit migrants from particular national categories once they have started doing this. In part, this is because of managers' preferences for network recruitment (Waldinger and Lichter, 2003): search for new workers in the social networks of workers they have already employed lowers the risks that are associated with hiring new personnel. Moreover, employed migrants readily forward information about job openings to friends and relatives. Drawing on a multiple case study of 13 knowledge-intensive firms in Sweden that had employed skilled migrants from India and/or China, he suggests managers had views of the attributes of these migrants (including their social disposition and orientation towards work) that were similar to those ascribed to migrants filling jobs with lower training requirements. Although managers valued these attributes, they might contradict other attributes that managers are searching for in high-skilled workers. Reasons given by managers for employing migrants from these countries included being able to pay them less than Swedish workers, that it was difficult to find Swedish workers, and that having migrants gives a competitive edge in the market. When recruiting such migrant workers (from particular countries) for the first time, managers drew on experience of other organisations/institutions (e.g. other employers, universities) in order to lower the risks of lack of experience of international recruitment from new countries.

Lack of alternative sources of labour

- 2.59 In the face of a lack of applicants, some employers may have little choice but to rely on recruitment of foreign workers. This need not be disadvantageous to the employer. This is exemplified by experience from a study in Washington State in the USA where there is a heavy reliance on foreign-born workers to provide long-term care. Despite three in four nursing home administrators reporting language issues, and a third reporting challenges related to cultural and/or religious differences of migrant workers, the proportion of foreign-born employees was positively associated with independent facility quality ratings (Acker et al., 2015).

- 2.60 Timescales are also important – for example, in nursing type roles it takes too long for trainees to come through the system. This means that while in health and care (particularly in the NHS) there is an emphasis on increasing training to expand the supply of labour, and pay and conditions have been improved to help attract and retain staff, there continues to be recruitment from outside the UK in order to meet staffing targets (Deeming, 2004).
- 2.61 More broadly, employers face a balancing act of ensuring practical skills are in place for the 'here and now' to deal with 'business as usual' operations, while also looking ahead to the skills needed for future business development and success; as such they may deploy a mix of strategies to meet short-term needs and longer-term needs.
- 2.62 Research with employers on skills requirements looking forward emphasises that a mix of skills (generally involving technical/digital and softer skills – not all of which are developed in the current education system) is increasingly important in a rapidly changing and complex labour market (Lyons et al., 2020). Businesses use formal and less formal processes to identify skills needs, with larger companies being more likely to have formalised procedures in place. Outside of some large employers, there is a general lack of detailed evaluation of specific training/skills development strategies. Larger employers may seek broader and deeper relationships with universities/colleges to facilitate development of curricula to meet their needs.

The relative ease of employing migrant labour

- 2.63 The relative ease of employing migrants is also a factor in their employment. Evidence from the construction sector in Ireland in the 'Celtic Tiger' economic boom years suggests that an open labour market policy facilitated use of migrant workers by employers to address labour and skills shortages at a variety of levels (Krings et al., 2011). Larger firms transformed into 'management firms', outsourcing parts of the production process to subcontractors and recruitment agencies. Consequently, these firms only had a relatively small share of directly employed migrants, mainly in higher-skilled construction positions. Often their main exposure to migrant labour was through subcontractors and agency labour on building sites via subcontracting arrangements and informal recruitment patterns. Hence EU migrants played an important role in meeting employers' needs for a flexible workforce. As the economic situation changed from boom to bust, the bargaining power of employers increased. However, there is also evidence that some employers turn to migrant workers because of a lack of other sources of supply, even though this is not a costless solution. Insights from a telephone survey with fifty employers across a range of sectors in Dumfries and Galloway (a rural area in Scotland with an ageing population) highlighted that such recruitment could involve the costs of specialist recruitment agencies, translation services and even accommodation (Hollywood and McQuaid, 2007).
- 2.64 There is some indicative evidence from science and engineering in the US that making it easier to employ migrants enabled employers to specify precisely the qualities desired to fill a particular job quickly, while limiting prospects for US workers who could fill that job with some retraining. Martin (2012) focused on the science and engineering sector, and specifically computer-related jobs where foreign science and engineering workers are concentrated. The sector has been prone to periods of boom and bust, with implications for labour demand. This led on the one hand to universities and employers seeking students/workers in science and engineering, and on the other to lay-offs of US scientists and engineers during economic downturns. The latter group may believe that employers prefer foreigners because they are willing to work "hard and scared" to keep their US jobs while being sponsored by their employers for US immigrant visas. After a period of downturn in the engineering labour market, most

employers preferred to hire young graduates who may have more up-to-date skills and expect lower salaries than older engineers who may have found other jobs during the downturn. The wage and opportunity gaps between the USA and migrant countries of origin have supported the development of a migration infrastructure that helps students and workers enter the United States. This in turn raises the issue of whether easy access to skilled foreigners distorts US labour markets and affects the education and career choices of US students. This underlines the importance of working towards an optimal balance between migrant recruitment and investment in training.

- 2.65 Research exploring recruitment strategies in Ireland when boom labour market conditions prevailed, highlighted how a casualised approach to recruitment was favoured, privileging softer skills in a booming labour market over credentialised skills. This has privileged migrant workers (in part due to perceptions of a good work ethic) (Moriarty et al., 2012). Employers reported requiring quite a diverse range of qualifications, skills and experience (though this varied by sector). Employers' concept of 'skill' was quite vague, encompassing both educational qualifications and specialised training and soft skills (attitude and personality), but the latter predominated, with experience being privileged above qualification and potential above qualifications. The consequence was a flexibilisation of recruitment for skills and experience.

3. Review of evidence on employer decisions around skill and employee shortages by broad occupational groups at RQF3-5 level

3.1 Administrative and secretarial occupations (Major Group 4)

- 3.1 Little evidence was found on employer decision-making for this occupational group. However, Stirling (2015) found that EU-15 migrants in the UK are well-represented in this occupational group.

3.2 Public service and associate professionals (Minor Groups 356, 331 and 355)

- 3.2 No relevant academic literature was identified.
- 3.3 A submission to the MAC highlighted the lack of interest amongst prospective employees in the UK for veterinary inspection roles. In the face of insufficient applicants from the UK, it has been necessary to turn to recruitment from outside the UK. Those with a background in agriculture, food safety or veterinary technician work and have relevant baseline qualifications are trained to the qualification of Meat Hygiene Inspector. A veterinary services provider notes that over 90 per cent of recruits have been from other EU member states.

3.3 Business associate professionals (Minor Groups 352, 353 and 354)

- 3.4 The literature on business services tends to focus on RQF6+ rather than RQF3-5 level occupations. A report on skilled migration to the UK (George et al., 2012) focused on migration as a means of meeting strategic skill needs, including in the financial services industry, with an emphasis on banking services. The report found that companies sought migrant workers with strategically important skills which were not seen as readily available among UK resident workers, for example, banks recruited migrant workers to fill gaps in specialist skill areas. However, the banks whose representatives participated in the study also employed staff who had language skills and an in-depth understanding of business and culture in international locations. In addition to recruiting migrant workers, cross-border transfers of staff within multinational corporations was another means of meeting these strategic skill needs.
- 3.5 The newly established UK Financial Skills Services Taskforce (2020) stated in their final report that skill shortages in the banking sector could not be addressed sufficiently by reliance on migrant talent. The task force recommends that a new, permanent Skills Commission should be set up for the financial sector to consider alternative means of meeting the skill needs.
- 3.6 Focusing on accounting, a study by Weller (2017) explored migrant accountants who moved to Australia in 2005-10, when accounting was classified as an 'in demand' occupation. Although accounting is an occupation with longer training requirements, the study is nevertheless of relevance here because one of its main findings is that a significant minority of migrant accountants moved into other, accounting-related occupations with medium training requirements. The largest group, 30-40 per cent of migrant accountants worked in accounting or in related professional and managerial positions; another 20-30 per cent were employed in accounting-related administrative and clerical occupations (which are amongst jobs with medium training requirements), and the remainder were spread among other occupations, especially retailing (for

women) and transport-related occupations (for men). The study concluded that while the migration pathway known as ‘the employer nomination pathway’ responded to existing vacancies in the accounting labour market, in other visa categories an accounting qualification was used as a proxy for the type of skill favoured in a general migration programme, in this case, numerical skills. In these visa categories, migrant accountants ‘trickled across’ and ‘trickled down’ to work in a range of occupations, most of which were not recognised as skill shortage occupations.

- 3.7 In a submission to the MAC a stakeholder indicated that it was hard to recruit the following occupations: 3520: Legal associate professionals; 3539: Business and related associate professionals – including Data analysts; 3531: Estimators, valuers and assessors; 3541: Buyers and procurement officers; 3542: Business sales executives; and 3543: Marketing associate professionals. It was also noted that there remains a consistent demand for data analysts, including during the Covid-19 crisis.

3.4 Health and social care occupations (Sub-major Group 32 and 61 and Minor Group 124)

Health care occupations

- 3.8 Regular workforce planning plays a key role in the NHS, the largest employer in the UK, to help ensure there are sufficient number of staff with the right skills at the right time. This process involves key stakeholders and informs the commissioning of training places. Key strategies used to address skill shortages in the NHS include: employment of bank or agency staff, changes in skill mix; staff development (growing your own staff); and international recruitment. At the same time, the NHS is also looking for ways to increase its productivity, including through adopting new technologies. Pay is highly regulated in this public service organisation through the Agenda for Change and Pay Review Bodies making recommendations to Government.
- 3.9 In the health care sector, literature on skills shortages has focused on degree-level occupations, largely due to the lead-time of at least three years’ training (and more for medical doctors). The Shortage Occupation List (SOL) at the time of writing includes a number of degree-level occupations, such as medical practitioners and nurses, while the focus of this review is on qualifications below this level, at RFQ3-5. However, an earlier study (UKCES, 2014) indicates that there is an expectation that migrant workers in health and social care will help address shortages in jobs with shorter training requirements as well as jobs with longer training requirements.
- 3.10 Decisions to recruit from overseas, as part of a wider longer-term workforce strategy, will be informed by the organisation’s own workforce data on vacancy and turnover and data on the national situation, as well as financial considerations at NHS Hospital Trust level. Rather than acting as individual employers, organisations are encouraged to collaborate with local or regional partners to draw on existing experience, to enable the sharing of processes and/or costs associated with international recruitment. An example is the pan-London Capital Nurse programme, which was established in 2015 to create a sustainable local nursing workforce, and which developed a pan-London best practice overseas recruitment guide (NHS Employers, 2020). Employers may decide to recruit international staff in cohorts to support them efficiently through their induction and training. Due to the worldwide shortage of health care professionals employers need to recruit ethically and are strongly advised to adhere to the UK Code of Practice (CoP) for international recruitment, with NHS Employers maintaining the list of recruitment agencies adhering to the code (NHS Employers, 2020, drawing on employer good practice case studies).

- 3.11 No pertinent information was identified for the following occupations: Dispensing opticians (3216); Health associate professionals N.E.C. (3219); Health care practice managers (1241); Nursery nurses and assistants (6121) – although some generic information relating to the early years workforce is the section other caring occupations; Dental nurses (6143); Pharmaceutical technicians (3217). In the case of Medical and dental technicians (3218), a report by Fuller et al. (2013) noted that there is a lack of detailed workforce data on technician roles in the health care sector.

Nursing auxiliaries and assistants (6141)

- 3.12 The Interim NHS People Plan (2019) identified a need for 'urgent, accelerated action to tackle nursing vacancies, especially in primary and community, mental health and learning disability settings' (p.3). To help alleviate nursing shortages, the new role of a nursing associate (requiring a two-year apprenticeship leading to RQF level 5) has been introduced in England in a number of test sites back in 2017. It is a new entry route in its own right and it is also a stepping-stone to degree level nursing for people who want to pursue this route. The Interim NHS People Plan has committed to providing training for an additional 7,500 nursing associates in 2019, with 1,693 being registered with the Nursing and Midwifery Council in March 2020 (Nursing and Midwifery Council, 2020). While new roles take time to bed in, an initial evaluation among trainee nursing associates was largely positive, yet it was found that acceptance among colleagues still needed to be improved (Traverse, 2018). A study led by Kings College London² is (at the time of writing) examining the new role and how it can help to improve some of the recruitment and retention problems in this area. Initial findings suggest that the large majority of successful applicants are recruited from healthcare support workers employed at hospitals (Health Education England, 2019) and one case study suggests that some applicants needed support to achieve the required NVQ level 2 and 3 in English and Maths (NHS Improvement, 2019). The qualitative part of an initial evaluation also indicates that many aspire to go to university and become a registered nurse through this route (Traverse, 2018), suggesting that this is an important staff development and progression route facilitating recruitment and retention in the NHS. Being able to tap into existing funding via the NHS Apprenticeship Levy may help to facilitate the roll out. The employer referred to in the case study earlier reported that the establishment of the new training has helped to significantly reduce agency spending for health care assistants and improved care.

Care occupations

- 3.13 Increased demand for care services is expected to continue given the ageing of the population. At the same time the sector experiences a high number of vacancies (estimated to be 122,000 or 7.8 per cent of all roles) (Skills for Care, 2019), with stakeholders describing the situation predominantly as challenging, in a study conducted by Moriarty, Manthorpe & Harris (2018). Employers used a range of recruitment channels (including word of mouth) to attract staff and employ around 17 per cent non-British workers (8 per cent from the EU and 9 per cent from outside the EU) (Skills for Care, 2019), yet they are also experiencing high turnover rates. An earlier study, based on interviews with employers and recruitment agencies, reported that the 'main drive for recruiting migrant workers was to address workforce shortages, whether through specific recruitment campaigns outside the UK or through the employment of newly arrived migrants seeking work' (Hussein et al, 2011). Exploring social care managers' responses to tightening immigration rules in the first half of the 2010s, Manthorpe et al. (2018) outlined the stresses and tensions faced by managers in implementing new/changing immigration regulations and managing the risks of non-

² <https://blogs.kcl.ac.uk/socialcareworkforce/2019/06/25/national-study-starts-of-new-nursing-role/>

compliance, while still running their service. Asked about the key drivers for recruiting migrant social care workers, Hussein et al. (2011) found in their large qualitative study among employers that this is mainly due to the difficulty of recruiting UK workers to those jobs. The study showed that employers valued migrant workers for what they bring to care work, such as being hard-working and their caring approach to those they care for – often older people who may be held in greater esteem in their home countries than is the case in the UK.

- 3.14 To help reduce the number of vacancies in adult social care, the Department for Health and Social Care ran national recruitment campaigns in 2019 and 2020. There has also been a stronger focus on value-based recruitment for some time to help attract the individuals with values and behaviours that align with those of the care provider into the job. Social care is a rewarding yet poorly-paid job despite some recent pay increases following the introduction of the National Living Wage (NLW) in 2016 for those aged 25 and over. Local authorities set a financial framework for the care services they commission, based on the funding they receive from central government, and this greatly affects the pay rates of care workers.
- 3.15 The review identified no recent specific evidence on employers' decision-making around skill and employee shortage for senior care workers. However, in earlier studies stakeholders, including employers and recruitment agencies, made some references to senior care worker shortages (Hussein et al., 2011), with some employers applying for licences to be able to recruit senior care workers from non-EU countries (Manthorpe et al., 2018). Care workers can progress to senior care workers who typically complete, or have completed, an RQF level 3 apprenticeship. Vacancy data reported by Skills for Care (2019) suggest that it is easier to recruit senior care workers than it is to recruit care workers (5.7 per cent compared to 9.0 per cent). The senior care worker role offers a modest increase in pay (rising on average from £16,200 to £17,600 in the independent sector, which employs most care workers (Skills for Care, 2019) and more job security, as relatively fewer senior care workers than care workers are on zero hours contracts (Skills for Care, 2019). Employers may see the progression route as a tool to help develop and retain valued care workers. However, a submission to the MAC highlights the fact the consistent demand for more staffing in this industry, noting that it is a profession of high social value (that has become more apparent during the 2020 COVID-19 pandemic). Salaries for this job are particularly low, and the submission argues it is difficult to see how employers would be able to sponsor workers under the current Tier 2 (General) system salary threshold.

Residential, day and domiciliary care managers and proprietors (1213)

- 3.16 Besides recent vacancy figures indicating that these are lower for managers compared to care workers (see above), and thus suggesting relatively fewer recruitment issues, the study did not identify any further relevant research. Orellana's (2014) scoping study on care home managers and owners focused on their role, recruitment and reasons for leaving, among others. It noted that a small number of owners did not have a required registered manager in place, yet the reasons for not recruiting a permanent manager remain unclear.

3.5 Other caring occupations

Early years care

- 3.17 Extant literature focuses on challenges in recruitment and retention in the early years workforce, but largely addresses issues across occupations working in this sector. The Education Policy Institute and Ceeda are authoritative sources of intelligence on the early years sector.

- 3.18 Ceeda's 2019 early years workforce survey, involving in excess of 550 organisations, found that most vacancies were for jobs requiring an RQF3-5 qualification and that the number of hard-to-fill vacancies was higher compared to the average across all sectors (21 per cent compared to 8 per cent), with London, the South East and the West Midlands being most affected. The survey shows that those who had experienced recruitment difficulties responded most often by recruiting candidates with potential without the required qualifications or experience, and then investing in upskilling. Other, less prevalent, training-related actions included paying for qualifications or developing apprenticeship schemes (27 per cent each). Other actions taken by about 30 per cent of responding employers were to increase the supply of staff flexibly by increasing the use of overtime or using bank staff, while making much less use of agency staff (11 per cent) who are generally more expensive. Offering higher salaries in a low-paid sector facing financial pressures was an action taken by 19 per cent of survey respondents, with very few employers recruiting staff from abroad (4 per cent) (Ceeda, 2020). Overall, this study suggests that investment in training to help upskill new recruits in the childcare sector is a key response to staff shortages and in particular hard-to-fill vacancies, flanked by other measures.
- 3.19 Non-UK born staff play a minor role in this sector, with around 2.7 per cent in the Ceeda survey reported to be EU nationals. A study based on Labour Force Survey data (including nursery nurses and assistants, childminders and related occupations, playworkers, teaching assistants and educational support assistants) found that 14 per cent were non-UK born, with 6.2 per cent being from the EU (Bonetti, 2019). Recruitment and retention issues were reported to have increased for level 3 staff according to another workforce survey, based on more than 500 employer responses (NDNA, 2018).

Other occupations

- 3.20 The review did not locate pertinent literature for the other occupations identified in the identified sub-major group.

3.6 Skilled construction and building trades (Sub-major group 50)

Background

- 3.21 Research on the construction and building sector shows that it is a volatile sector, prone to gluts and shortages in demand for workers (CIOB, 2015), with these problems being most evident in more skilled occupations (HM Government, 2013). This means that workers with intermediate skills tend to be recruited on a project by project basis (Farmer, 2016). This volatility has been exacerbated by recent changes in the residential construction sector, particularly the decline in council house building (i.e. the social rented sector). Traditionally, council house building was used as a counter-cyclical demand tool not only for the residential construction market, but for an array of associated construction work. Employers would move into the council house sector when demand was lower in the private housing market, giving them continuity of income and allowing them to employ more workers on a more or less permanent basis, retaining their skills in the organisation and reducing the need for recruitment (Farmer, 2016).
- 3.22 Due to its project-specific nature, the construction sector has a long history of flexibilised employment structures (Buckley et al. 2016). The sector has a very high proportion of small and medium-sized enterprises (SMEs) estimated at around 90 per cent of firms and there is a high degree of self-employment and, relatedly, large amounts of sub-contracting. Behling and Harvey (2015) point to a high level of bogus/false self-employment. False self-employment describes self-employed persons who

declare themselves (or were declared) as self-employed 'simply to reduce tax liabilities, or employers' responsibilities' on a massive scale in the sector. A large proportion of workers in the construction sector are in business on their own account and have no employer who is directly responsible for their supervision and development.

- 3.23 Some jobs, such as groundworks and concrete laying, require significant experience and training. Yet these jobs are often considered as having low- and medium skill requirements (Anderson and Ruhs, 2012).

Mechanisms for addressing skill shortages

- 3.24 **Poaching:** By far the most common strategy for addressing skills shortages identified in the literature was simply poaching workers from other firms. This was seen by employers as an easy recruitment practice because they could recruit skilled and experienced workers without the need to invest in training. The worker's employment in a rival organisation was seen as a recommendation of their suitability, meaning that the recruitment process could be less onerous for employers using this strategy. In some cases, poaching involved offering more money than subcontracting firms, but for the most part, it involved offering better working conditions, longer contracts and more prestigious or skilled work. In this way, larger firms were able to draw appropriately skilled employees away from firms lower down the supply chain (Atkinson and Hargreaves, 2014).
- 3.25 **Developing the skills pipeline and promoting training:** In a submission to the MAC, a professional body for construction management highlighted the importance of the construction industry in supporting the UK's economic recovery and delivering the UK Government's levelling up agenda and national infrastructure priorities. In order to achieve the goal, the professional body made the case that the construction industry needs to have flexible and timely access to non-UK workers to bridge any emerging skills needs that could impact recovery and growth of the UK economy. The argument was that training needs to be seen alongside continued access to migrant workers to provide the flexibility that the industry needs.
- 3.26 When intermediate skills are in short supply, one recourse open to employers is to train up employees with lower level skills. However, Dromney et al. (2017) find that employers in the construction sector are less likely than average to train their employees. This can largely be attributed to the short-term, project-based nature of the construction sector, which has been found to be a disincentive to investment in training that could develop a skills pipeline in individual organisations and in the sector as a whole. Workers with intermediate skills are a transient, casualised and often self-employed workforce, meaning that employers consider it unlikely that they will see any return on their investment (Chan et al., 2010). They are also concerned that employees they train could be poached by rival companies (Abdel-Wahad, 2012).
- 3.27 The size of many employers can also serve as a disincentive to training and developing a skills pipeline. Training requires a time investment by employers and can take staff conducting training away from other work. This is felt more strongly in SMEs where there is no single individual responsible for managing the delivery of training. McGregor and Sutherland (2013) argued that there is scope for a shared apprenticeship model in the home building sector so that small firms that do not have the capacity to commit to an apprenticeship can host an apprentice between a group of firms, which has the additional benefit of offering apprentices more varied work.

- 3.28 Abdel-Wahab (2012) proposed that greater use could be made of experienced workers to provide mentoring and training to upskill workers and to allow employers to take on apprentices. He suggested that there is more scope to provide joint union-employer funding to further develop this kind of training. Additionally, he proposed that greater use of virtual learning environments (VLEs) may promote training in the sector, as this means that employers do not have to offer time-consuming, risky placements on site. UKCES (2012) also suggested that greater integration of technology into training and work processes could enhance skill development and reduce deficits in skills and number of workers.
- 3.29 There have also been suggestions that the type of training available to develop intermediate construction skills is not always appropriate. Training is often focused on bringing in employees at the lowest levels, but little attention is paid to developing their skills further. This gives potential trainees a negative view of construction work, as it is not seen as providing jobs offering opportunities for progression, rather the sector is seen as providing cold, dirty, dead-end work that may not even be sustained (Mohamed et al., 2017). As a result, outcomes from such lower-level training also tend to be poor, with relatively few trainees completing their courses and going on to find work in the construction sector.
- 3.30 Menz (2011) found that a lack of collaboration between employers in the construction and building sector meant that there was little drive to develop collaborative programmes that provide industry-specific skills. Rather, when training was conducted by employers, it tended to focus on the delivery of firm-specific skills and some more generalist training. This was seen to limit the potential for trained workers to be poached by other, rival firms. Similarly, Chan, Clarke and Dainty (2010) argue that construction workers in the UK tend to be 'single skilled' rather than trained for a range of activities.
- 3.31 Brydon and Dachis (2013) found that in Canada, although requiring accreditation may drive up pay for those who are skilled, it also acted as a barrier to entry. They argued that there should be a greater focus on regulation and assessment of the quality of work done, rather than on the inputs in terms of the qualifications of those doing the work.
- 3.32 **Core-periphery models:** Marriott and Moore (2014) found that for skilled craft-based jobs, recruitment was often based on assessing candidates while they did the job for a probationary period. The division of an employer's workforce into a core and periphery can also promote the employment of migrants. Friberg (2011) found that in Norway, construction firms often had a core of largely Norwegian workers who knew about the technical aspects of the work, how to use machinery and so on, and a periphery of migrant workers, dominated by workers from Poland, who did more low-skilled manual labour. The core workers might be given additional training, but this was not the case for the periphery workers. If a periphery worker was found to be particularly good or had higher-level skills, they might be moved into the core. This was a recruitment channel used particularly for migrants as it gave the employer a chance to assess the migrant worker on the job. This gave employers who were uncertain about the qualifications held by a migrant to see their skills in action, as well as to assess their language skills, soft skills and whether they would fit in to the organisational culture. In this way, employers were able to ensure that the workers they recruited had the appropriate skills and attitudes with minimal risk.
- 3.33 A different type of core-periphery model is evident in the use of posted workers. Caro et al. (2015) found that in Finland, Germany and the Netherlands, large companies functioned as the main contractor while small and medium companies and

employment agencies located abroad served as subcontractors and provided labour. In some cases, this could be a low-cost solution for employers in high labour-cost countries. While this was also evident in the UK, protections afforded to workers with intermediate skills meant that this was not a particularly low-cost way of recruiting workers with intermediate skills, but was a way to address skills shortages.

- 3.34 **Diversifying recruitment channels:** Chan et al. (2010) found that employment practices in construction tended to be informal, with employers relying on word-of-mouth recruitment and promoting within the firm's internal labour market. A lack of longer-term planning arising from the need to deliver projects within a strict time-frame and to make sufficient profits meant that employers would repeatedly seek out the same subcontractors. This drove up wages for these subcontractors as employers competed for their time. It also prevented entry into the market of alternative subcontractors and other sources of labour (Atkinson and Hargreaves, 2014). Chan, Clarke and Dainty (2010) suggest that this promotes a 'no outsiders' mentality that prevents diversification of the sector, particularly the recruitment of women and BAME workers. They further noted that the requirement that workers in recognised skilled trades provide their own tools can create a barrier to entry, as employers would only employ people who already have their own equipment.
- 3.35 **Modern methods of construction:** One way of addressing an ageing workforce and skill shortages in the construction sector is investment in modern methods of construction (MMC) (Farmer, 2016). MMC is seen as having the potential to speed up delivery, improve productivity and modernise the sector. MMC strategies are associated utilisation of pre-manufacturing technologies, digitisation and IT literacy, requiring investment in skills of construction workers (Davies et al., 2018). Adoption of MMC reduces the requirements for some types of labour and migrant workers, but makes migrant workers with experience in MMC more attractive.

Employment of migrants

- 3.36 Abdel-Wahab (2012) suggests that there are three key drivers for construction employers to employ migrants. Firstly, the UK-born construction workforce is ageing and this, combined with issues with training and apprenticeship programmes and falling birth rates, means that there are structural shortages in the sector. Secondly, industrialising nations have been growing rapidly both demographically and economically, leading to construction booms in these countries. Consequently, their skills training systems are producing qualified workers who may be drawn to the UK, either by recruitment agencies advertising abroad or through speculative migration in the belief that they will be able to access more highly paid work than is available in their home country. Thirdly, there has been a trend towards bigger and more complex projects, including residential mega-projects and large infrastructure projects that require a larger pool of labour and skills than local areas can provide (Tutt et al., 2013; Meardi et al., 2012). While recruitment of migrant workers for these projects tended to be at the top and bottom of the occupational scales, there was also evidence of recruitment of workers to RQF3-5 level jobs. Workers may be recruited from abroad as temporary workers for these projects, but it was also the case that employers would not favour migrants, but simply employ whoever they could find who had the necessary skills, which included migrants. In a submission to the MAC, a trade association in construction noted that very few of its members recruited from non-EEA countries, demonstrating the low levels of experience and engagement with the current Tier 2 (General) system in the sector.
- 3.37 The 'single-skilled' nature of training in the UK has also been found to promote the employment of migrants (Abdel-Wahab, 2012). Migrant workers may be preferred

simply because they are more multi-skilled, and may also have more transferable skills, due to the different nature of training in other countries (Anderson and Ruhs, 2010).

- 3.38 While the use of agencies to recruit a casual workforce has been seen as removing the impetus for training from employers, there is some evidence in the literature of agencies promoting training and even facilitating it. Pijpers (2010), writing on the Netherlands, found that several International Employment Agencies (IEAs) had recognised the growing demand for skilled workers in areas such as construction, welding, metal work and carpentry. Consequently, they had enrolled their workers on courses and training programmes to obtain skill certificates that would be recognised by Dutch employers, increasing the pool of migrant workers with intermediate skills available to them. Similarly, Bachan and Sheehan (2010) found that agencies can play a role in helping UK employers to translate and understand overseas qualifications and work experience. This can help to reduce one of the key issues in recruiting migrants to fill gaps in intermediate skills – underutilisation of skills. However, at times of high demand, agencies often focussed simply on volume rather than on the appropriateness of the job match. Moriarty et al. (2012) also found that during a boom in demand, employers were more likely to turn to employing migrants, but that many of these migrants would be overqualified for the simpler jobs they were employed to do. However, they suggested that once these migrants were employed, they constituted a reserve of skills and potential and could be called upon to do work more commensurate with their skills and experience as needed. Bachan and Sheehan (2010) similarly found that while migrants may initially experience downgrading, most workers with intermediate manual skills and experience eventually ended up in occupations that use these skills.
- 3.39 The use of informal methods of recruitment, such as relying on personal networks and recommendations from existing employees can both hinder and promote the recruitment of migrants. Anderson (2010) suggests that self-employment in the construction sector means that migrants can easily find work within their migrant networks, but that this is often with employers lower down the supply chain and requires migrants to take on the risks of self-employment. Conversely, these types of recruitment can act as a barrier to migrants finding more stable work with employers higher up the supply chain, as they are not part of the right networks.
- 3.40 Literature looking at different occupations within the skilled construction and building trades group was rare, with most authors considering that recruitment issues and skills deficits were common across the sector. Some literature was found on bricklaying, which is an occupation that has been considered to be particularly hard-hit by these issues.

Bricklayers and masons (5312)

- 3.41 The Letwin report (2018) highlighted a considerable shortage of bricklayers. In the UK, bricklaying remains a demarcated trade, defined by output and performance with its boundaries clearly distinguished from other building trades on the basis of employer-defined tasks in the workplace. As a consequence, training focuses on the production of bricklayers, rather than construction workers who can do bricklaying as part of their job or workers who can do a range of tasks with a common basis. Hutchinson et al. (2012) suggest that this has tended to fossilise the profession, reducing innovation and limiting the scope for development of, and training in, new construction techniques while creating an oversupply of workers trained in traditional skills and techniques that are becoming less in demand. A cross-industry report on shortage occupations in

construction in construction reiterates the continued shortage of bricklayers (BuildUK, 2019).

- 3.42 This is particularly evident in the house-building sector, where bricklaying is largely confined to laying bricks and blocks. In contrast, in commercial activities, bricklayers are required to carry out a wider range of tasks, including working with stone and concrete. This means that movement from the house-building to the commercial sector is limited and when bricklayers from the commercial sector take employment in the house-building sector, their skills may be undervalued or wasted. Similarly, in times of boom in the construction profession, when there would be more scope for training, employers tend to instead focus on finding and developing more specialised skills, rather than on training to develop a range of skills.
- 3.43 Bricklaying is a trade that relies to a great extent on informal on-the-job training of the kind that employers have been shown to be increasingly reluctant to provide. Similarly, apprenticeship training is becoming increasingly focused on work-based experience, meaning that there is a shortage of training places. As a result, vocational educational and training in bricklaying has had to move to a more classroom-based approach, which does not provide employers with the ready-made workforce they are looking for when recruiting for the kinds of short-term, time-sensitive projects that are common in the sector (Brockman et al., 2010).
- 3.44 The Letwin report (2018) recommended that there should be an immediate “flash” programme of on-the-job training to quickly address the shortage of bricklayers, but recognised that there is likely to be a continuing need to employ bricklayers on a temporary basis, given that such a high proportion (around 90 per cent) are self-employed. In the longer-term it suggests the need for greater co-operation between government and construction businesses and more effort to promote careers in construction in schools and colleges. Pegden (2019) also suggests that embracing technology may be a way to address the shortage of bricklayers in the longer term, particularly the development of bricklaying robots that would reduce the more repetitive and physically demanding aspects of the work.
- 3.45 Despite this shortage of bricklayers, Pegden (2019) found that employers did not appear to be turning to migrants to fill skills gaps in bricklaying.

3.7 Skilled metal, electrical and electronic trades (Sub-major group 52)

Background

- 3.46 Skills shortages in the skilled metal, electrical and electronic trades have tended to arise due to a lack of investment in apprenticeships and other training in the 1980s and 1990s, which had been the traditional route for developing these skills. This effectively closed off the route of developing the skills of entry-level workers so that they could undertake higher level and more specialist work. Mason and Bishop (2010) suggest that further skills gaps have developed due to a lack of continuous training to allow these trades to respond to the changes in the use of technology, new processes and so on that have been particularly evident in these occupations (Penesis et al., 2017).
- 3.47 As skills shortages worsened, fear of poaching further precluded training of these workers, meaning that firms became reliant on external recruitment, competing for a declining number of intermediate skilled workers. Poaching usually involved offering higher wages (Lerman, 2016). Hamilton-Smith (2012) found that employers in Canada felt unable to engage in apprenticeships to address skills shortages due to the volatility

of demand for work, fear of poaching of trained workers by competitors and the burden that having an apprentice placed on small firms (which were also less likely to have steady work contracts).

- 3.48 A lack of joined up thinking to training as a solution to skills shortages and the relatively large number of small firms lower down supply chains meant that this situation remained largely unaddressed (Mason, 2013). There is some evidence in the literature of a concerted effort to address these issues in some of the skilled metal, electrical and electronic trade occupations, particularly those that are less dominated by small firms. Lewis (2013) and Mason (2013) both found evidence of ‘over-training’ by large employers. This involved training more apprentices than they require to meet their own anticipated business needs with the extra apprentices being or becoming employed by other firms in their sector or supply chain. These other firms pay a contribution towards the apprenticeship programme, which helps the larger firm to cover the costs of running the programme, but do not have to make the kind of high financial and time commitment that training their own apprentices would involve (Mason, 2013).

Employment of migrants

- 3.49 There was little evidence in the literature of employers recruiting migrants as a deliberate strategy to address a shortage of workers with medium training requirements. When migrants were specifically targeted, this tended to be for jobs with longer training requirements in engineering where large companies sought talent globally. There was also evidence of the historical reliance of industries such as shipbuilding on employing migrants in roles with shorter training requirements. Migrants with RQF3-5 level skills might be recruited as part of an open recruitment process for intermediate jobs, but they would not be directly targeted or preferred over other groups of workers.

Welding trades (5215)

- 3.50 The literature often includes welders under a general category of construction workers, and the welding trades share many of the issues seen in the construction sector. The welding trades are the only occupations where there was evidence in the literature of specific recruitment of migrants to fill intermediate skills gaps. This was largely led by construction employers, although McCollum and Findlay (2011) also find evidence of employment of migrants through agencies in the oil and gas sector.
- 3.51 The use of agency workers is common in recruitment in the construction sector and Rolfe and Hudson Sharp (2016) found evidence of agencies providing training to welders and other skilled trades. In this case, an agency had established a welding training school in Poland. They tested and certified the welders before supplying them to clients in the UK. These welders would initially be employed on temporary contracts but some of these temporary contracts would be converted into permanent jobs. Generally, these agency workers were employed on the same terms and conditions as UK workers due to an agreement with the sector’s trade unions. Jones (2014) found similar evidence of recruitment of welders from Poland. However, she found that this strategy was pursued not just because of a lack of qualified welders locally, but also because the welders from Poland were willing to work on temporary contracts and could be paid less.
- 3.52 Writing on Canada, Warrian (2019) also highlighted the need for welders willing to work on temporary contracts. He found that employers tended to want to employ welders quickly and temporarily to staff confirmed projects. Consequently, there was little investment by employers in training of welders or upskilling of staff to become welders. Where training did occur, it was in firms that specialised in welding and had a long

history of running their firms in the model of family businesses, offering training as much because it was a good thing to do as for any kind of economic motivation. The Canadian Welding Bureau had developed a shared-responsibility apprenticeship programme known as the Enhanced Welder Apprentice Training (EWAT) to facilitate collaboration between employers and local training providers and between multiple employers to reduce the burden on single employers and give apprentices experience of different metal fabrication processes and skills. It was hoped that this would improve retention of welders in the trade.

Pipe fitters (5216) and Metal working production and maintenance fitters (5223)

- 3.53 Lewis (2013) finds that pipe fitting and maintenance is an area that has become increasingly outsourced, so that firms no longer recruit and employ these workers directly. This may be partly in response to the significant recruitment problems firms experienced in recruiting maintenance technicians, their unwillingness to train, and the ways in which widespread poaching of workers was driving up the costs of recruitment and wages (Mason, 2012).

Vehicle technicians, mechanics and electricians (5231)

- 3.54 Much of the literature on skills with medium training requirements in the automotive industry focuses on the manufacturing process. Leach (2013) and Leech (2012) both found that the car-manufacturing sector had experienced difficulties in recruiting staff with the right skills. Employers in the automotive industry found themselves competing with other scientific and engineering firms for technicians and apprentices.
- 3.55 Poaching is a common response to skills shortages at all levels in the automotive sector. Foy and Murray-Brown (2013) give the example of JLR and Bentley drawing workers away from Tier 1 and Tier 2 component firms, moving the problems associated with skills shortages further down the supply chain. Similarly, the Automotive Council (2013) found evidence of Tier 1 suppliers drawing skilled labour away from Tier 2 and Tier 3 suppliers. Grollmann et al. (2017) found that in car servicing, UK firms incur high recruitment costs when trying to find workers at RQF3-5 level, but were unwilling to take apprentices because the initial investment in taking an apprentice was high and there was uncertainty about whether they would benefit because poaching of trained staff was so common. Word-of-mouth recommendations were frequently used by employers to identify potential workers who had recently completed training at another firm.
- 3.56 Mechanics have traditionally come through apprenticeship schemes, but while larger organisations have a well-developed apprenticeship system (CBI, 2013, The Society of Motor Manufacturers and Traders (SMMT), 2012), there was evidence in the literature that these apprenticeship schemes have been insufficient to meet demand (Begley, Collins and Donnelly, 2015), particularly given the lack of investment in apprenticeships in the 1980s and 1990s (Grollmann, et al. 2017). In-house training to 'grow your own' and develop a skills pipeline from the factory floor is becoming increasingly common. The Automotive Council (2013) and UKCES (2013) suggested that, particularly in SMEs, financial and time constraints meant that this training to grow skills was often light touch and of insufficient quality and duration. Feloy and Dsouza (2013) found that while larger firms were able to develop relationships with Further Education colleges to recruit people with intermediate technical skills, SMEs did not have the resources and influence to do this. The development of University Technical Colleges (UTCs) that facilitate early vocational specialisation similar to the apprenticeship schemes that had previously worked well to provide a workforce with sufficient intermediate skills may go some way to address this, although there is

insufficient evidence for an assessment at this point. There is a further issue that apprenticeships are not transferable between all nations of the UK.

- 3.57 There is potential to address skills shortages through diversifying the workforce, particularly in bringing more women into the sector. However, Begley et al. (2015) noted that the lack of women in the sector can be traced back to the lack of female students studying physics at school, meaning that such a strategy would take some time to bring about significant change in addressing skills shortages.

Aircraft maintenance and related trades (5235)

- 3.58 As in the case of the automotive sector, much of the literature on the aerospace industry focuses on manufacturing rather than maintenance of aircraft. Lewis (2012) found that, as in many of the other skilled metal, electrical and electronic trades, issues with training meant that recruitment was usually done externally. He found that there were difficulties in getting young people to train to acquire RQF3-5 level skills for aircraft maintenance because they were guided into higher education rather than apprenticeships, due to a lack of understanding of which route to pursue to achieve their career goals.

3.8 Science, engineering and technical associate professionals (Sub-major group 31)

Background

- 3.59 Amongst the science, engineering and technology associate professionals, there is evidence in the literature of skills shortages at technician level and concerns about the ageing of the technician workforce (Kelly, 2013; Lewis, 2012; Mason, 2012). Technicians are skilled workers that work with complex systems or perform highly technical mechanical or diagnostic tests.
- 3.60 Recruiting from the external labour market, apprenticeships and on-the-job task specific training were all ways in which employers of science, engineering and technology associate professionals were recruited.

Solutions to skills shortages

- 3.61 **Recruiting people with higher level skills:** There was considerable evidence in the literature of employers recruiting people who were 'overqualified' for RQF3-5 level jobs, for example, people with degrees. This was due to the relative availability of people with higher level skills and qualifications and their willingness to accept technician-level employment. In 2010, Jagger, Signala and Sumption found that in occupations that generally required RQF level 4 qualifications, such as laboratory technicians (3111), building and civil engineering technicians (3114), quality assurance technicians (3115), science, engineering and production technicians (3119), IT operations technicians (3131), IT user support technicians (3132), more than 20 per cent of the workforce were qualified to RQF level 6 or above. It is anticipated that this proportion will have increased since 2010. Indeed, a report published by the Russell Group in 2017 highlighted that nearly 90 per cent of EU and non-EU technicians were educated to NQF Level 6 and above. A MAC (2020) report also discussed the issue of technicians frequently having degrees, although the the job does not require one.
- 3.62 Lewis (2013) similarly found evidence of recruitment of graduates into RQF3-5 level positions. Employers regarded this as a way of saving money on training, as graduates would possess the skills required as well as (largely unused) degrees. These graduates would not earn more because they were graduates. However, Lewis (2013)

notes that these graduates were often dissatisfied with their low pay, lack of progression opportunities and skills use and, in some cases, did not have the practical level skills, typically gained through a vocational training route, that employers needed. This could limit the cost savings achieved by the employer not training their own technicians, as the cost of continually needing to recruit was high. In some cases, this could be remedied by having a more elaborate division of labour in which graduates were given more complex tasks than vocationally educated technicians (Mason, 2012). While this addressed some of the issues, employers had experienced with graduates being unhappy and leaving the firm because their skills were not used, it could cause problems amongst technicians who lost the opportunity to develop higher level skills and felt that their relative status and importance to the employer had declined (Diamond et al, 2011).

- 3.63 There was little evidence of these graduates crowding out those with intermediate skills, due to the general lack of people with RQF3-5 level skills available. In some cases, graduates were recruited into roles that had previously been occupied by those with RQF3-5 level skills due to the increasing complexity and consequent higher skill demands of these roles, and in these cases graduates in these roles were paid a premium. However, in other cases it appeared that graduates were being recruited simply because they were available and willing to accept pay levels commensurate with RQF3-5 level-skilled work (Mason, 2012, UKCES, 2010).

Recruiting migrants

- 3.64 There was some evidence of migrants with degrees being recruited to fill posts requiring qualifications at RQF3-5 level and then being given additional tasks that used their higher level qualifications. In the case of migrants, employers were able to justify employing them in a lower level role due to their lack of required certifications in occupations like architecture (Romanowski, 2016). A report by BIS (2015) indicated that employers accepted a trade-off between higher churn of migrants as they moved to other jobs more quickly or returned to their home country, and the skills they could offer whilst they were with the employer. There was also an acceptance that migrants might have lower English language skills and not be suitable for certain roles but would be more than qualified for others.

Laboratory technicians (3111)

- 3.65 Laboratory technicians provide an example of an occupation where there is a distinction between the skills required to carry out the typical tasks of a laboratory technician and the skills actually possessed by those recruited as laboratory technicians (Lewis and Gospel, 2011).
- 3.66 Lewis and Gospel (2011) show that the recruitment methods used to fill RQF3-5 level roles are in part determined by the external local labour market. Employers in industrial areas were able to find a supply of workers who had not necessarily trained to be a laboratory technician in a university, but who had all the necessary skills to perform this work and could be recruited by offering higher wages than in the engineering, pharmaceutical and other types of firm where they were currently employed. In cases where such a ready supply of appropriately skilled potential employees was not available, or where specific skills were required now or in the future, employers would recruit apprentices and train them using a mixture of work-based learning, off-the-job training and technical education.
- 3.67 In 2011, Lewis and Gospel found examples of university departments recruiting graduates into laboratory technician roles. They found that this was in part due to rising skill demands, but also because it was easier and quicker to recruit a graduate than to

train an apprentice. In some cases, a new division of labour had emerged in which graduate technicians provided support to postgraduate scientists. However, some of these university departments had started to set up apprenticeship programmes for developing scarce skills in fields such as mechatronics, mixed mechanical and electrical skills and specialist areas of chemistry.

Engineering technicians (3113)

- 3.68 In aerospace, Lewis (2012) found evidence of a preference for training/upskilling workers to RQ3-5 level so they could work as technicians. This was particularly the case in larger firms. This preference was due to the increasingly specialist skills firms required. Training their own technicians also allowed employers to plan for orderly succession of technicians to cope with an ageing workforce, to instil company-specific values and to indicate to employees that the company valued them and would invest in their skills, in order to make them more loyal.

3.9 Culture, media and sports occupations (Sub-major group 34)

Background

- 3.69 The literature suggests that roles in the creative industries are labour-intensive because many depend on human creativity and innovation (Bazalgette, 2017). Bakhshi et al. (2015), in an analysis of skills requirements in different job roles, noted that jobs in the creative category are highly resistant to automation on the basis of estimates that 87 per cent of workers in such jobs in the UK are at low or no risk.

The role of migrant workers

- 3.70 The Sector Skills Council focusing on 'screen skills' (Screenskills Alliance, 2019) stated in their Annual Screen Skills Assessment that the proportion of overseas workers employed across the screen industries was almost the same (12 per cent) as their proportion in the wider UK economy (11 per cent). A slightly lower proportion of EU 27 migrants (6 per cent) were employed in the screen industries compared to 7 per cent in the wider economy. The report also found that these average figures hid significant variation: in particular, visual effects was reported as employing one in three workers from the EU. This finding suggests that employers in the screen industry are more likely to look overseas to address their skills issues, reflecting the international focus of the screen industries.
- 3.71 A report by the Creative and Cultural Skills Sector Skills Council that focused on the current and future skills needs of the sector (2020) found that migrant workers fulfilled important roles within the sector, particularly in publishing. Another relevant finding was that employers (except for sole traders) experienced fewer skills-related issues when compared with businesses operating in other sectors. However, the report warned that existing skills shortages could be exacerbated after the UK leaves the European Union. The report suggests that skills gaps and shortages should be addressed through training and recruitment, which should build co-operation between employers, schools and training providers in the further and higher education sector. The report also noted that business leaders in the culture sector may need training in the skills that enable them to adapt and respond to change.
- 3.72 The video games sector bridges the creative industries and the ICT sector, bringing together producers, programmers, designers, artists, marketers and business analysts who together design, develop and launch games. International case study research (including case studies from the UK) showed that creativity is the key driver of the industry as companies and individuals try to establish new types of games,

functionalities, designs, stories, characters and tie-ins. In this way, the industry allowed workers to express their creativity and tried to attract players to their games. Technological advances in ICT allowed game design to develop in terms of its capacity, functionalities, display and memory use etc. (Keune et al., 2018). A submission to the MAC from a video games company highlighted the need for workers with a mix of skills. Technological advances in ICT allowed game design to develop – for example, in terms of its capacity, functionalities, display and memory use. The submission noted that talented individuals with native language skills and a high level of industry knowledge were in short supply, and that this shortage was expected to continue. This need reflected the company's customer base and had been met through recruitment of non-UK labour. This mix of skills could not be delivered in its entirety by the company's in-house training programme and a new Apprenticeship Programme with a local university.

- 3.73 The publishing sector faced some similar issues. A submission to the MAC from a publishing body representing the interests of book and journal publishers highlighted translation professionals and data scientists as occupations of specific concern. Hiring international translators was noted as being important to get an accurate translation of the written word and a robust product for the market.

3.10 Textiles, printing and other skilled trades (Sub-major group 54)

Background

- 3.74 Recruitment of employees into the textiles, printing and other skilled trades is shown in the literature to be hindered by the size of firms in the sector (with a large number of employers being sole traders or micro-businesses), a lack of training opportunities both to develop craft specific skills and training in management and how to run a business, and the need for very specific skills that are often not transferrable to other professions. In combination, these factors meant that the pool of labour available to some trades was very small and employers were unaware of strategies to resolve skills shortages.
- 3.75 Bertram (2017) found that recruitment into craft trades was desperately needed due to the ageing of workers in these trades. She found that not only did an ageing workforce mean that there was a danger of skills being lost as workers retired, but that it created a negative perception of craft work amongst younger people who viewed certain craft-related jobs as declining professions of interest only to people in middle-age and retirement. This was exacerbated by a view on the part of both potential recruits and those employed in craft occupations that it was difficult to make a living in many of these jobs and that even when people undertook and completed training, there was a lack of sustainable employment opportunities for them.
- 3.76 The literature showed that there was simply a lack of younger people with skills in areas such as metal and woodworking due to the decline of teaching of these subjects in schools. Bertram (2017) also noted that there has been a decline in the number of further and higher education courses teaching craft skills, and that those courses that remained increasingly focused on theoretical approaches rather than the development of practical skills, and that there is a declining emphasis on teaching traditional techniques and making from scratch rather than simply restoration.
- 3.77 Additionally, the fact that the skills required for these occupations were very niche and training in such skills could take a long time and be expensive and risky (given their lack of transferability to other skilled work, should employment be difficult to find), presented an additional barrier (Bertram, 2017). This meant that it was difficult to

diversify some of the craft trades, further creating the impression that this type of work was a hobby-job for people with significant financial support, particularly younger people who had support from their families or people in middle age or nearing retirement who were changing profession and had years of earnings behind them. A reduction in demand for skills in the context of the mechanisation of production and the increased use of technology, such as CNC machines and digital printing, meant that there has been a reduction in demand for traditional craft skills in any case.

Mechanisms for addressing skill shortages

- 3.78 Traditionally, skills development in many of the craft trades has relied on long-term informal apprenticeships and intra-family transmission, but these traditional methods are dying out due to a lack of demand amongst younger people and the increased costs associated with offering apprenticeships. Given this, there was consensus in the literature that the most appropriate way to address skills gaps was by drawing younger people into training, and ultimately into work, in skilled trades. This could be done through the development of a pipeline beginning with young people being made aware of craft as a career option when they were at school (Bertram, 2017; Richards-Carpenter, 2016). This is a long-term solution to addressing skill and employee shortages, but the literature provided little evidence of more immediate solutions to address a shortage of employees. There was some evidence in the literature of mechanisms to encourage more people to establish themselves as sole traders or microbusinesses (Bennett, 2017), but little evidence of how businesses might recruit people with desirable skills.
- 3.79 While the increased formalisation of apprenticeship routes was noted as being broadly positive as it provided a clear training route (Bennett, 2017), concerns were raised about the appropriateness of such formal training for all skilled trades, as well as the prohibitive cost of offering such training in small businesses. However, Bertram (2017) also noted that relying on short courses lasting only one or two days meant trainees only learnt basic skills or one particular aspect of a craft and did little to develop intermediate and high-level skills, so there was a need for provision of longer-term, more in-depth training. Richards-Carpenter (2015) found that, in contrast to countries such as Italy, there was little evidence of small businesses in the skilled trades forming partnerships to train people in a range of skills and to limit the burden on any one firm.
- 3.80 A key issue for recruitment into the skilled trades emerging from the literature was a lack of training in leadership and management. Employers seeking workers with RQF3-5 level skills were usually craftspeople who needed to take on more employees to grow their businesses (Bakhshi and Spilsbury, 2019) but they lacked an awareness of how to do this effectively in a challenging labour market (Carey, Florisson and Giles, 2019).

Employment of migrants

- 3.81 The literature review yielded no evidence on the employment of migrants in RQF3-5 level roles. There was some literature on the employment of migrants in roles with shorter training requirements and a suggestion that this work might one day require higher skills, and discussion of offshoring abroad, but no discussion on bringing migrants to the UK.

Weavers and knitters (5411)

- 3.82 Richards-Carpenter (2016) found that lace production and weaving and knitting activities used to need craftsmanship skills and therefore had relied on skilled artisans and workers. While the textile manufacturing cluster in the East Midlands still contained

people with these skills, these workers were ageing and their skills would be lost when they retired. The study further found that there was little training to replace them. The only way employers saw to address this was by encouraging less skilled/ less experienced workers to remain in the sector and develop skills through experience. However, this was very difficult to achieve as it could take decades to learn some skills and pay was very poor for lower skilled workers. This meant that they did not stay in the sector long enough to develop these skills, preferring to move into jobs in sectors such as retail that offered comparable pay levels, greater opportunities for career development and more pleasant working conditions.

- 3.83 Richards-Carpenter (2016) also notes that these workers in roles with shorter training requirements were at greater risk of losing their jobs due to increased mechanisation, curtailing any skills-building they were engaged in. The application of computers to various processes and increased mechanisation increased demand for workers in jobs with medium training requirements. However, these skills were not necessarily in traditional methods of spinning or weaving, but in operating more advanced machines. Consequently, when recruiting these employers were not necessarily looking for people with traditional skills and experience in weaving. There was no evidence of recruitment of migrants into these jobs.

Butchers (5431), Bakers and flour confectioners (5432) and Fishmongers and poultry dressers (5433)

- 3.84 Behan et al. (2015) noted that some employers in the meat industry experienced difficulties attracting and retaining skilled butchers, and de-boners and skilled butchers have appeared on the shortage occupations list. A submission to the MAC from a representative body found that although some roles in butchery are suitable for automation, this is only cost-effective in large plants (generally serving large markets). Moreover, the submission highlighted that there are tasks where there is an ongoing need for human skill. For example, machines are not sufficiently dextrous to act as quickly and efficiently as a human with the requisite skills in ascertaining the cut point to eviscerate an animal; mistakes here can lead to the expense of a carcass being condemned. However, Heasman and Morley (2017) found that the employment of migrants to address skills shortages in butchery largely focused on employing migrants in roles with shorter training requirements that involved often unpleasant work that UK workers do not want to do.
- 3.85 Hutchinson et al. (2012) provide evidence of how the supermarket Morrisons has sought to increase the availability of skills in butchery, bakery and fishmongery through training. Morrisons had found recruiting the number of workers they needed with these skills to be challenging and so had started working in partnership with community-based organisations to provide training and job opportunities for unemployed people.
- 3.86 These findings from the literature are echoed in a submission to the MAC from a retail body that highlighted skill shortages in butchery. Measures taken to reduce shortages facing the butchery trade in retail included the "Better Jobs" campaign to ensure that future jobs are as attractive and fulfilling as possible, upskilling using the Apprenticeship Levy and broadening the scope of recruitment efforts.
- 3.87 A further submission to the MAC highlighted that migrant workers have added to the UK workforce, rather than directly replacing it. As the need for labour has risen, the pool of suitable workers has typically not been available other than in the EU27 countries. Stakeholders reported that they had sought to increase salaries in an effort to reduce shortages, along with increased spend on training and recruitment

campaigns but that despite these efforts, shortages remained and reliance on migrant workers continued to grow.

Florists (5443)

- 3.88 One example was found of training of migrants to work in floristry. However, this initiative did not appear to be driven by a need to address skills gaps in floristry, but was an altruistic initiative to improve the access of female refugees to the labour market. Bread and Roses is a social enterprise providing floristry training to refugee and asylum seekers to help them to find meaningful work, develop their English language skills and increase their self-confidence. The initiative has trained more than 50 women, some of whom have gone on to work in floristry while others have used the transferable skills they developed to find employment in other sectors (Lewis, 2017).

3.11 Agricultural occupations (Sub-major group 51 and Minor Group 121)

- 3.89 Much of the research on agricultural occupations focuses on labourers/roles with shorter training requirements (e.g. Scott, 2013a, 2013b). Migrant workers are an important source of labour for such jobs that UK workers are reluctant to take. The Seasonal Agricultural Workers Scheme (SAWS) was a longstanding scheme to address seasonal labour shortages in horticulture.
- 3.90 While not specifically focusing on occupations of interest to this study, research by Gindele et al (2016) research provides information on how agricultural employers in Germany address skills shortages, drawing on a non-representative online survey of managers of SMEs in agriculture, who employ at least one person who is not a family member (n=294). Focusing on those who already experienced skills shortages (n=66), the study found that the two most important strategies used to help address these included automation to reduce the number of jobs and improvement of working conditions to increase retention (both 67 per cent) followed by pay rises and more publicity for agricultural occupations (both 55 per cent). Employment of migrants and other strategies played a lesser role (27 per cent).
- 3.91 Like many skills surveys in other sectors, Pye Tait Consulting's (2019) research on the ornamental horticultural sector in the UK identified the scope and causes of skills shortages and does not provide information on the specific strategies employers used to address skills shortages. Their research indicated, however, that in this sector (with around 335,200 workers) most hard-to-fill vacancies that remained open concerned skilled trades, such as gardeners, arboricultural consultants or contractors (13.6 per cent), while the figure was lowest for managers and directors (2 per cent). Similarly, a study by RDI Associates (2017) on forestry skills in England and Wales, in part based on telephone interviews with employers and stakeholders, did not indicate any skills shortage issues for forestry managers, although there was found to be a need to attract and develop forestry managers with the required skills set.
- 3.92 A submission to the MAC highlights that the 2019 Horticulture Skills Survey (Pye Tait Consulting (2019) showed an ageing workforce, difficulties in filling skilled vacancies, challenges in recruiting apprentices, and a general shortage of labour. Its findings added further weight to a 2016 State of Parks report that stated '41 per cent of park managers report horticultural skills have fallen over the past three years' (Heritage Lottery Fund, 2016).
- 3.93 The dairy sector also faces difficulties filling vacancies. In a submission to the MAC an organisation for dairy farmers cited a survey that they had undertaken in 2016 which

found that over half of respondents (56 per cent) had employed staff from outside the UK in the last five years – a 24 per cent increase on 2014. Almost two-thirds said this was due to insufficient UK staff being available. Larger, more intensive operators, were facing particular challenges, with an increasing reliance on foreign labour, with foreign workers fulfilling shift patterns, which they argued were not acceptable to the domestic labour force. Their dairy operations tended to function 24/7 with employees often working shift patterns. Other responses to skills shortages included education and training – emphasising the skilled nature of the work, introduction of technology, and publicity in inner cities to recruit a more diverse labour force.

- 3.94 A further factor highlighted in submissions to the MAC by employers/sectoral organisations in agriculture and forestry as leading to recruitment of non-UK labour in some roles is that workers need to be based in rural (sometimes remote) locations. This geographical location aspect was cited as being unattractive to some UK workers.
- 3.95 A submission to the MAC from a fishing body highlighted a lack of local applicants and the need to look outside the UK to find the skills, qualifications or experience needed. Some of the main difficulties in recruitment were expressed as lack of reliability or experience from local workers, unwillingness to undertake the work, and competition from other maritime industries, such as the oil and gas sector (in Scotland). Respondents cited the shift work and unsociable hours, along with the temporary or insecure nature of the work as further barriers to recruitment.

3.12 Other (Sub-major group 11, 12, 54, 62, 71, 81, 82 and Minor Group 351)

Other: Hospitality and leisure

- 3.96 These occupations are largely focused on managers or owners in hospitality and leisure as well as retail and wholesale. Evidence from a survey drawing on members of the industry association British Hospitality Association (BHA) showed that a sizeable percentage of workers are EU nationals (13.5 per cent among hotel and accommodation managers and proprietors and 20.8 per cent among catering and bar managers) (KPMG, 2017). However, considerations as to how the need for labour could be met after Brexit and how realistic they were focused largely on the sector as a whole. There was an expectation among BHA members that future staff demand could be met only at an increased cost, due to training staff and potentially implementing pay increases. The conclusion was that it may take a number of years to fill the 'recruitment gap' deploying a range of strategies.
- 3.97 A literature review undertaken by Davidson and Wang (2011) as part of an empirical study into recruitment and retention in the hospitality sector in Australia noted that outsourcing is one strategy for addressing labour shortages in this sector for a variety of reasons. Examples included cleaning and housekeeping and more recently administrative and human resources functions. Various retention strategies to reduce the high turnover were also reported to be key for addressing staff shortages.

Chefs (5434)

- 3.98 There is employer survey data (Winterbotham et al, 2018) and qualitative evidence (KMPG, 2017; People 1st, 2017; Rolfe and Hudson-Sharp, 2016) that employers in the UK and other countries (People 1st, 2017) experience shortages of chefs. However, there is little research on how employers respond to this specific shortage or trade off different factors in decision making process.

- 3.99 An exception is a recent publication by Sector Skills Council People 1st exploring chef shortages in more detail, drawing on interviews with 48 businesses and other evidence. The report found that chef shortages, as evidenced by unfilled vacancies, could lead to an increase in working hours among existing staff, potentially impacting on their turnover. Strategies adopted to address the issue included increased use of agency staff, recruiting chefs without the required experience or changing the business operation.
- 3.100 There is acknowledgement within the sector that pay is typically below market value, and that seeking higher pay is an increasingly important factor in labour turnover among chefs, but employers are expected to make different choices. If employers considered offering increased pay, for example linked to skills development, they were likely to seek ways to increase productivity, given low profit margins in the sector (People 1st, 2017).
- 3.101 Increasing the number of migrant workers has helped to address the chef shortage. The number of migrant chefs in the hospitality industry rose from 37 per cent to 47 per cent between 2011 and 2016, according to Labour Force Survey data, and the number of EU nationals in this occupation increased from 29 per cent to 43 per cent over the same period (People 1st). Similarly, Rolfe and Hudson-Sharp (2016) reported in their case study based research that some employers relied on EU migrants to meet demand for chefs, with some finding difficulties attracting young people in particular market segments, such as restaurant chains and low budget restaurants. Attracting chefs from outside the EU was seen as too cumbersome and too costly by one employer, while bureaucracy would also prevent others recruiting from non-EU countries more generally (Rolfe and Hudson-Sharp, 2016).
- 3.102 Focusing on case studies in hospitality, food processing and construction, Rolfe and Hudson-Sharp (2016) found that, in line with other studies, there was 'little evidence that employers look specifically to recruit EU migrants.' (ibid, p.5), rather they seek to maximise the number of applications and to attract a high calibre of applicants, given the lack of supply among UK-born workers.
- 3.103 A key argument of the People 1st report is that solutions to address chef shortages need to be multi-pronged, with international recruitment continuing to play a role. Strategies discussed in this report include the following. First, developing an integrated careers campaign involving stakeholders across the sector. Second, capturing the interest of young people through early age interventions, as People 1st research indicates the importance of cooking inspiration early on in their lives for those training as chefs. Third, increasing the number of college completers who want to work in the industry. Fourth, creating a quality workplace through a range of HR interventions (including retention and engagement; making best use of apprenticeships, working hours and shift work; culture of the kitchen and management skills of chefs; pay and incentives; and learning and development). Fifth, job and operational re-engineering, with options discussed including 'de-skilling operations' enabling more production chefs with a less broad skill base to be brought in; increase in production kitchens, e.g. for home delivery, requiring fewer classically trained chefs; and innovations such as simplifying menus to increase productivity and reduce costs. Sixth, international recruitment, with the report arguing that while the above measures will help to address staff shortages over a number of years, there is still a need to bring in 'innovation and speciality skills' through recruitment from abroad (People 1st, 2017). One strategy to help overcome shortages also mentioned by Rolfe and Hudson-Sharp (2016) is that some local employers were engaged in a regional initiative to help promote careers in hospitality locally, which may bear its fruits over time rather than in the short-term.

- 3.104 In a submission to the MAC, an organisation underscored the long-term nature of skills shortages, particularly for chefs and assistant chef roles. It argued that the industry has been responding by working hard to promote the food preparation career pathway, as well as recruit from overseas to fill gaps. Recruitment was reported to be a constant issue for the pub sector due to the extremely high turnover of staff. Moreover, job shortages were accentuated due to seasonal demands.

Other: Energy and environment

- 3.105 The literature that discusses the recruitment of migrant workers in the waste management sector focuses on occupations at RQF6+ level, for example engineers, and on occupations at RQF1-2 level, such as 'pickers' in materials recovery facilities (MRF) (Clay, 2017). Discussing the potential impacts of the UK leaving the European Union on the waste management sector, a representative of a specialist recruitment company said that if it becomes more difficult to recruit migrant workers, the industry would need to attract more domestic workers, and to do this it would probably be necessary to increase salaries.
- 3.106 This reliance on migrant labour in RQF1-2 level occupations, notably 9235 Refuse and Salvage Occupations was underscored in a submission to the MAC from a recycling and waste management business that indicated that it had difficulty recruiting local labour, and that those locals who did take up employment do not stay. This led to a reliance on recruiting from Eastern Europe, through agencies, with nearly 70 per cent of the workforce coming from the EU. The business reported that turnover of workers had doubled as candidates were uncertain about Brexit, and that agencies in Latvia and Poland had reported fewer applicants due to uncertainty over Brexit.

Other: Transport

- 3.107 A study that focused on skills shortages and migration in Ireland found that the maritime transport sector was among those with the greatest skills demands (Gusciute et al. 2015). The study found that many occupations which are either non-technical, or not specific to the marine economy, may be 'marinised' through additional training or a top-up qualification in a marine context. 'Marinisation' is likely to affect the skill needs of businesses which rely on recruiting migrant workers into RQF3-5 level occupations.
- 3.108 In its submission to the MAC, a road haulage representative body highlighted that the road haulage sector has relied on migrant labour, predominantly from Eastern Europe, for driving and other roles. This was because the workforce is ageing and there are insufficient local candidates.

References

- Abdel-Wahab, M. (2012) 'Rethinking apprenticeship training in the British construction industry' in *Journal of Vocational Education & Training* 64(2): 145-154.
- Acker, K., et al. (2015). "Foreign-Born Care Givers in Washington State Nursing Homes: Characteristics, Associations With Quality of Care, and Views of Administrators." *Journal of Aging and Health* 27(4): 650-669.
- Afonso, A. (2019). "Migrant Workers or Working Women? Comparing Labour Supply Policies in Post-War Europe." *Journal of Comparative Policy Analysis* 21(3): 251-269.
- Agtaş, Ö. B. and Sauviat, L. (2010) *The Case of the London Olympics from a Migration Aspect*. https://www.global-labour-university.org/fileadmin/Summer_School_2014/luciole-oezge-glu-publication-construction.pdf
- Alarcon, R. (1999). "Recruitment processes among foreign-born engineers and scientists in Silicon Valley." *American Behavioral Scientist* 42(9): 1381-1397.
- Anderson, B. (2010) 'Migration, immigration controls and the fashioning of precarious workers' in *Work, Employment and Society* 24(2): 300-317.
- Anderson, B. and Ruhs, M. (2012) 'Reliance on migrant labour: inevitability or policy choice?' in *The Journal of Poverty and Social Justice* 20(1): 23.
- Anderson, J. T. (2019). "The Migration Industry and the H-2 Visa in the United States: Employers, Labour Intermediaries, and the State." *International Migration* 57(4): 121-135.
- Andrijasevic, R. and D. Sacchetto (2017). "'Disappearing workers': Foxconn in Europe and the changing role of temporary work agencies." *Work Employment and Society* 31(1): 54-70.
- Atkinson, G. and Hargreaves, J. (2014) *An exploration of labour mobility in mining and construction: who moves and why*. National Centre for Vocational Education Research, Adelaide.
- Automotive Council (2013) *Driving Success – a strategy for growth and sustainability in the UK automotive sector*. London, HMSO. <https://www.gov.uk/government/publications/driving-success-uk-automotivestrategy-for-growth-and-sustainability>
- Bachan, R. and Sheehan, M. (2011) 'On the Labour Market Progress of Polish Accession Workers in South-East England' in *International Migration* 49(2): 104-134.
- Bakhshi, H. and Spilsbury, M. (2019) *The Migrant and Skills Needs of Creative Businesses in the United Kingdom*. <https://pec.ac.uk/assets/publications/The-Migrant-and-Skills-Needs-of-Creative-Businesses-in-the-United-Kingdom-REPORT.pdf>
- Bakhshi, H., Frey, C.B. and Osborne, M. (2015) *Creativity vs. Robots – The Creative Economy and the Future of Employment*, Nesta. https://media.nesta.org.uk/documents/creativity_vs_robots_wv.pdf
- Bazalgette, P. (2017) *Independent Review of the Creative Industries*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/649980/Independent_Review_of_the_Creative_Industries.pdf
- Begley, J., Collis, C. and Donnelly, T. (2015) 'Skills shortages: A brake on the British car industry?' in *Local Economy* 30(6): 593-608.

- Behan, J., McNaboe, J., Shally, C. and Burke, N. (2015) *National Skills Bulletin 2015*. <http://www.tara.tcd.ie/bitstream/handle/2262/74529/National-Skills-Bulletin-2015.pdf?sequence=1>
- Behling, F. and Harvey, M. (2015) 'The evolution of self-employment in the British construction industry: a neo-Polanyian account of labour market formation', *Work, Employment and Society* 29(6): 966-988.
- Bellmann, L. and Hubler O. (2014). "The Skill Shortage in German Establishments Before, During and After the Great Recession." *Jahrbucher Fur Nationalokonomie Und Statistik* 234(6): 800-828
- Bennett, J. (2017) *Crafting the craft economy*. CAMEo Cuts No. 4, University of Leicester and Research Institute for Cultural and Media Economies.
- Bertram, G. (2017) *The Radcliffe Red List of Endangered Crafts. The Heritage Crafts Association*. <http://research.uca.ac.uk/4515/3/The-Radcliffe-Red-List-of-Endangered-Crafts-Research-Report-revised%281%29.pdf>
- Bloch, A. and S. McKay (2015). "Employment, Social Networks and Undocumented Migrants: The Employer Perspective." *Sociology-the Journal of the British Sociological Association* 49(1): 38-55.
- Blue, S. A. and A. I. Drever (2011). "Subcontracting Work via Social Networks: Migrant Latino Labour and the Rebuilding of New Orleans." *Population Space and Place* 17(5): 489-504.
- Brockmann, M., Clarke, L. and Winch, C. (2010) Bricklaying qualifications, work and VET in Europe. CLR News
- Boockmann, B. (2015). "The Effects of Wage Subsidies for Older Workers." *IZA World of Labor* 1.
- Bonetti, S. (2019) *The early years workforce in England. A comparative analysis using the Labour Force Survey*. <https://epi.org.uk/publications-and-research/the-early-years-workforce-in-england/>
- Bossler, M. (2016). "Recruiting Abroad: An Empirical Analysis." *International Journal of Manpower* 37(4): 590-605.
- Brencic, V. (2010). "Do Employers Respond to the Costs of Continued Search?" *Oxford Bulletin of Economics and Statistics* 72(2): 221-245.
- Brydon, R. and Dachis, B. (2013) *Access denied: The effect of apprenticeship restrictions in skilled trades*. CD Howe Institute Commentary.
- Buckley, M., Zendel, A., Biggar, J., Frederiksen, L. and Wells, J. (2016) *Migrant work & employment in the construction sector*. International Labour Organization.
- BuildUK (2019). *Shortage occupations in construction: a cross-industry research report*. <https://builduk.org/wp-content/uploads/2019/01/Shortage-Occupations-in-Construction-A-cross-industry-research-report-January-2019.pdf>
- Cairncross, G. and S. Kelly (2008). "Human resource development and 'casualisation' in hotels and resorts in Eastern Australia: Getting the best to the customer?" *Journal of Management & Organization* 14(4): 367-384.
- Carey, H., Florisson, R. and Giles, L., 2019. Skills, talent and diversity in the creative industries. Creative Industries Policy and Evidence Centre

https://pec.ac.uk/assets/publications/PEC-Evidence-synthesis-scoping_Work-Foundation-FINAL.pdf

Caro, E., Berntsen, L., Lillie, N. and Wagner, I. (2015) 'Posted migration and segregation in the European construction sector' in *Journal of Ethnic and Migration Studies* 41(10): 1600-1620.

Ceeda (2020) *Early years workforce survey 2019*. <https://www.ceeda.co.uk>

Clay, M. (2017) Should I stay or should I go? *Recycling and Waste World*, 12 June 2017. <https://www.recyclingwasteworld.co.uk/in-depth-article/should-i-stay-or-should-i-go/156023/>

Confederation of British Industry (CBI) (2011) *Full Speed Ahead: an industrial strategy for the UK automotive sector*. London, CBI.

http://www.cbi.org.uk/media/2008476/cbi_full_speed_ahead.pdf

Chan, P., Clarke, L. and Dainty, A. (2010) *The dynamics of migrant employment in construction: can supply of skilled labour ever match demand?* Oxford University Press.

CIOB (2015) *An Analysis of Migration in the Construction Industry*.

http://www.ciob.org/sites/default/files/CIOB%20research%20-%20Analysis%20on%20Migration%20in%20the%20Construction%20Sector_1.pdf

Creative and Cultural Skills (2020) *Building a Creative Nation: Current and future skills needs*. Creative and Cultural Skills.

https://ccs.rooftop.io/sites/413/2020/03/26161330/Building_a_Creative_Nation_-_Current_and_Future_Skills_Needs6.pdf

Department for Business, Innovation and Skills (2015) *The impacts of migrant workers on UK businesses*. BIS Research Paper No. 217.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/406760/bis-15-153-impacts-of-migrant-workers-on-uk-business.pdf

Davies, A., Bagust, P. and Basquill, M. (2018). *Modern Methods of Construction: A forward-thinking solution to the housing crisis?* RICS, <https://www.rics.org/globalassets/rics-website/media/news/news--opinion/modern-methods-of-construction-paper-rics.pdf>

Dawson, C., Veliziotis, M. and Hopkins, B. (2018) "Understanding the Perception of the 'Migrant Work Ethic'." *Work Employment and Society* 32(5): 811-830.

Deeming, C. (2004). "Policy targets and ethical tensions: UK nurse recruitment." *Social Policy & Administration* 38(7): 775-792.

DeVaro, J. (2008). "The Labor Market Effects of Employer Recruitment Choice." *European Economic Review* 52(2): 283-314.

Diamond, A., Bowes, L., Hughes, T. and Connor, H. (2011) *Science technicians in the workforce: supporting their development needs*. The Science Council and CFE.

Dromey, J., Morris, M. and Murphy, L. (2017) *Building Britain's Future? The construction workforce after Brexit*. IPPR.

Eriksson, S. and D.-O. Rooth (2014). "Do Employers Use Unemployment as a Sorting Criterion When Hiring? Evidence from a Field Experiment." *American Economic Review* 104(3): 1014-1039.

Farmer, M (2016) *The Farmer Review of the UK Construction Labour Model: 'Modernise or Die'*. <http://www.cast-consultancy.com/wp-content/uploads/2016/10/Farmer-Review-1.pdf>

- Fellini I, Ferro A and Fullin G (2007) 'Recruitment processes and labour mobility: the construction industry in Europe', *Work Employment and Society* 21(2), 277-298.
- Feloy, M., DSouza, R., Jones, R. and Bayliss, M. (2013) Technology and skills in the aerospace and automotive industries.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/303097/evidence-report-76-aerospace-and-automotive-final-report.pdf
- Felstead, A., Gallie, D., Green, F. and Henseke, G. (2020) "Getting the Measure of Employee-Driven Innovation and Its Workplace Correlates." *British Journal of Industrial Relations*: 32, 1-32.
- Financial Skills Services Taskforce (2020) *Final report*. Financial Skills Services Taskforce.
<https://www.thecityuk.com/assets/2020/Reports/43e976fdcd/Financial-Services-Skills-Taskforce-final-report.pdf>.
- Findlay, A. and D. McCollum (2013), 'Recruitment and Employment Regimes: Migrant Labour Channels in the UK's Rural Agribusiness Sector, from Accession to Recession', *Journal of Rural Studies* 30, 10–19.
- Fitzgerald, I. (2007), Working in the UK: Polish Migrant Worker Routes into Employment in the North-East and North-West Construction and Food Processing Sectors, Report for the Trades Union Congress, TUC, London.
- Forde, C. and R. MacKenzie (2009). "Employers' use of low-skilled migrant workers Assessing the implications for human resource management." *International Journal of Manpower* 30(5): 437-452.
- Foy, H and Murray-Brown, J (2013) 'JaguarLandRover's success exposes shortages in engineering skills'. *Financial Times* 13 June 2013.
- Frank, D. (2018). "Strategies for recruiting highly skilled migrants from India and China: a case study of firms in Sweden." *Industrial Relations Journal* 49(4): 352-369.
- Friberg, J. H. (2012). "Culture at work: Polish migrants in the ethnic division of labour on Norwegian construction sites." *Ethnic and Racial Studies* 35(11): 1914-1933.
- Fuller, A., Turbin, J., Unwin., L., Guile, D. & Wintrup, J. (2013) Technician and intermediate roles in the healthcare sector.
<https://www.gatsby.org.uk/uploads/education/reports/pdf/reportpv4web.pdf>
- Gambin, L. and Hogarth, T. (2016) *Employer investment in intermediate STEM skills: how employers manage the investment risk associated with apprenticeships*. London: Gatsby Charitable Foundation.
- Gambin, L., Hogarth, T., Murphy, L., Spreadbury, K., Warhurst, C. and Winterbotham, M. (2016) 'Research to understand the extent, nature and impact of skills mismatches in the economy', *BIS Research Paper* 265.
- Gambin, L., Hogarth, T., Winterbotham, M., Huntley-Hewitt, J., Eastwood, L. and Vivian, D. (2016) *The apprenticeship levy: how will employers respond?*, Department for Education.
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/562445/The apprenticeship levy how will employers respond.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/562445/The_apprenticeship_levy_how_will_employers_respond.pdf)
- George, A. Lalani, M. Mason, G. Rolfe, H. & Bondibene, C. R. (2012) Skilled immigration and strategically important skills in the UK economy, NIESR.
https://niesr.ac.uk/sites/default/files/publications/290212_151752_0.pdf

- Gindele, N., Kaps, S. & Doluschitz, R. (2016). Operational possibilities for dealing with the shortage of skilled labour in agriculture. *Berichte ueber Landwirtschaft* 94(1). (report in German language). <https://buel.bmel.de/index.php/buel/article/view/89/Gindele.pdf>
- Golden, L. (1996). "The expansion of temporary help employment in the US, 1982-1992: A test of alternative economic explanations." *Applied Economics* 28(9): 1127-1141.
- Grollmann, P., Steedman, H., Jansen, A. and Gray, R. (2017). Building apprentice's skills in the workplace: Car service in Germany, the UK and Spain. CVER Research Paper 11.
- Golden, L. and E. Appelbaum (1992). "What was driving the 1982-88 boom in temporary employment – preference of workers or decisions and power of employers." *American Journal of Economics and Sociology* 51(4): 473-493.
- Green, F., Machin, S. and Wilkinson, D. (1998), "The meaning and determination of skill shortages", *Oxford Bulletin of Economics and Statistics*, Vol. 60, pp. 165-87.
- Green, A. and Taylor, A. (2020) Workplace perspectives on skills, City-REDI, University of Birmingham.
- Gusciute, E., Quinn, E. & Barrett, A. (2015) *Determining Labour and Skills Shortages and the Need for Labour Migration in Ireland*. ESRI Research Series, Number 49. Dublin, Economic and Social Research Institute.
- Hamilton-Smith, E.M. (2012). *Increasing skilled trades employer participation in apprenticeship training in British Columbia*. <https://core.ac.uk/download/pdf/56376289.pdf>
- Health Education England (2019) New Roles in Mental Health Nursing Associate Task & Finish Group. Supporting the mental health workstream. Final Report. <https://www.hee.nhs.uk/sites/default/files/documents/Nursing%20Report%20March%202019.pdf>
- Heasman, M. and Morley, A.S. (2017) *Earning a Crust? A review of labour trends in UK food manufacturing*. Food Research Collaboration / City University
- Heritage Lottery Fund (2016). *State of UK Public Parks*. https://www.heritagefund.org.uk/sites/default/files/media/attachments/state_of_uk_public_parks_2016_final_for_web%281%29.pdf
- HM Government (2013) Construction 2025. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/210099/bis-13-955-construction-2025-industrial-strategy.pdf
- Holgate, J. (2005), "Organizing migrant workers: a case study of working conditions and unionization in a London sandwich factory", *Work, Employment and Society*, Vol. 19 No. 1, pp. 463-80.
- Hollywood, E. and R. W. McQuaid (2007). "Employers' Responses to Demographic Changes in Rural Labour Markets: The Case of Dumfries and Galloway." *Local Economy* 22(2): 148-162.
- Hussein, S., Stevens, M., & Manthorpe, J. (2011). What Drives the Recruitment of Migrant Workers to Work in Social Care in England? *Social Policy and Society*, 113-125. (3), 285-298.
- Hutchinson, J., Devins, D., Hooley, T. and Kelsey, S. (2012). Developing business. developing careers. How and why employers are supporting the career development of their employees. London: UKCES.

- Jackson MO (2008) *Social and economic networks*. Princeton University Press, Princeton, NJ
- Jagger, N., Signala, M. and Sumption, F. (2010) *SET based Technicians: Lessons from the UK and European Labour Force Survey*. Report 475. Institute for Employment Studies. <https://www.employment-studies.co.uk/system/files/resources/files/475.pdf>
- Janta, H. and A. Ladkin (2013). "In search of employment: online technologies and Polish migrants." *New Technology Work and Employment* 28(3): 241-253.
- Jones, K. (2014) 'It Was a Whirlwind. A Lot of People Made a Lot of Money': The Role of Agencies in Facilitating Migration from Poland into the UK between 2004 and 2008' in *Central and Eastern European Migration Review* 3(2): 105-125.
- Kelly, S. (2013) *Defining skills need: the role of recognition of technician status*. Gatsby Foundation. <http://www.gatsby.org.uk/uploads/education/reports/pdf/defining-skills-need-the-role-of-recognition-of-technician-status.pdf>
- KPMG (2017) *Labour migration in the hospitality sector: a KPMG report for the British Hospitality Association*. <https://www.bha.org.uk/wordpress/wp-content/uploads/2017/05/BHA-EU-migration-final-report-170518-public-vSTC.pdf>
- Keune, M. et al. (2017) Innovation and Job Quality in the Games Industry in Germany, the Netherlands, Sweden and the UK, in Jaehrling K. (ed.) *Virtuous circles between innovations, job quality and employment in Europe? Case study evidence from the manufacturing sector, private and public service sector*. http://178.62.198.40/uploads/files/68_WP_6.pdf
- KPMG (2017) *Labour migration in the hospitality sector A KPMG report for the British Hospitality Association*. <https://www.london.gov.uk/moderngov/documents/s67080/BHA%20KPMG%20Labour%20migration%20in%20the%20hospitality%20sector%20report.pdf>
- Krings, T., Bobek A., Moriarty, E., Salamonska, J. and Wickham, J. (2011). "From boom to bust: Migrant labour and employers in the Irish construction sector." *Economic and Industrial Democracy* 32(3): 459-476.
- Leach, D. (2013) *Full Speed ahead: An industrial strategy for the UK automotive sector*. London, CBI.
- Leech, J. (2012) *Capturing Opportunity: An assessment of supply chain opportunities in the UK automotive sector*. London, SMMT. <http://www.smmmt.co.uk/2012/09/capturing-opportunity-an-assessment-of-ukautomotive-supply-chain-opportunities/>
- Lerman, R.I. (2016) 'Can We Develop Enough Skills for a Robust Manufacturing Industry?' in *Challenge* 59(3): 157-177.
- Letwin, O. (2018) *Independent review of build out: draft analysis*. Ministry of Housing, Communities and Local Government. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718878/Build_Out_Review_Draft_Analysis.pdf
- Lewis, D. (2017) 'How refugee women in London are using floristry to build a bright future'. I Team November 24 2017. <https://inews.co.uk/news/uk/refugee-women-london-using-floristry-build-bright-future-106059>
- Lewis, P.A. (2012) *Flying High? A Study of Technician Duties, Skills, and Training in the UK Aerospace Industry*. SSRN Electronic Journal.

- Lewis, P.A. (2013) *Technician roles, skills and training in the UK chemical industry: an analysis*. Gatsby Foundation.
<https://www.gatsby.org.uk/uploads/education/reports/pdf/chemical-industry-technicians-report.pdf>
- Lewis, P. and Gospel, H. (2011) *Technicians under the microscope: the training and skills of university laboratory and engineering workshop technicians*. Kings College London
- Lyons, H., Taylor, A. Green, A. (2020) *Rising to the UK's Skills Challenges*, Industrial Strategy Council.
- MacKenzie R and Forde C (2009) The rhetoric of the 'good worker' versus the realities of employers' use and the experiences of migrant workers. *Work, Employment and Society* 23(1): 142– 59.
- Manthorpe, J. Harris, J., Stevens, M. & Moriarty, J. (2018) "We're effectively becoming immigration officers': social care managers' experiences of the risk work of employing migrant care workers, *Health, Risk & Society*, 20(3-4): 113-125.
- Markova E., Paraskevopoulou A., Williams A.M. and Shaw G. (2016) 'Migrant workers in small London hotels: Employment, recruitment and distribution', *European Urban and Regional Studies* 2016, 23(3) 406–421.
- Marriott, J. and Moore, N. (2014) *NHBC Foundation: improving recruitment of young people into home building: a literature review*. University of Derby.
- Martin, P. (2012). "High-Skilled Migrants: S&E Workers in the United States." *American Behavioral Scientist* 56(8): 1058-1079.
- Mason, G. (2012) *Science, Engineering and Technology Technicians in the UK Economy*. NIESR and the Gatsby Foundation.
<https://www.gatsby.org.uk/uploads/education/reports/pdf/geoff-mason-report-2012.pdf>
- Mason, G. and Bishop, K. (2010) *Adult Training, Skills Updating and Recession in the UK: The Implications for Competitiveness and Social Inclusion*. Centre for Learning and Life Chances in Knowledge Economies and Societies.
- McCollum, D. and Findlay, A.M. (2011) *Employer and labour provider perspectives on Eastern European migration to the UK*. ESRC Centre for Population Change.
- McCollum, D. and E. Apsite-Berina (2015). "Recruitment through migrant social networks from Latvia to the United Kingdom: Motivations, processes and developments." *Migration Letters* 12(1): 50-66.
- McCollum, D. and A. Findlay (2018). "Oiling the wheels? Flexible labour markets and the migration industry." *Journal of Ethnic and Migration Studies* 44(4): 558-574.
- McGregor, A. and Sutherland, V. (2013) *Shared Apprenticeships for Home Building: A Scoping Study Final Report*. University of Glasgow.
- Meardi, G., Martín, A. and Riera, M.L. (2012) 'Constructing Uncertainty: Unions and Migrant Labour in Construction in Spain and the UK' in *Journal of Industrial Relations* 54 (1): 5-21
- Menz, G. (2011) 'Employer preferences for labour migration: exploring 'varieties of capitalism'-based contextual conditionality in Germany and the United Kingdom' in *The British Journal of Politics and International Relations* 13(4): 534-550.
- Migration Advisory Committee (2020) *A Points-Based System and Salary Thresholds for Immigration*.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/873155/PBS_and_Salary_Thresholds_Report_MAC_word_FINAL.pdf

Mohamed, M., Pärn, E.A. and Edwards, D.J. (2017) 'Brexit: measuring the impact upon skilled labour in the UK construction industry' in *International journal of building pathology and adaptation*.

Moriarty, E., Wickham, J., Krings, T., Salamonska, J. and Bobek, A. (2012) "Taking on almost everyone?' Migrant and employer recruitment strategies in a booming labour market' in *The International Journal of Human Resource Management* 23(9): 1871-1887.

Moriarty, J., Manthorpe, J., & Harris, J. (2018). *Recruitment and retention in adult social care services*. Social Care Workforce Research Unit, King's College London.

National Day Nurseries Association: NDNA 2017/18 Workforce Survey.
https://www.ndna.org.uk/NDNA/News/Reports_and_surveys/Workforce_survey/Workforce_survey_2018.aspx

NHS Employers (2020) International recruitment toolkit. <https://www.nhsemployers.org/your-workforce/recruit/employer-led-recruitment/international-recruitment/international-recruitment-toolkit>

NHS Improvement (2019) Developing HCSW roles – a nursing career solution.
https://improvement.nhs.uk/documents/5949/Aintree_-_developing_HCSW_roles.pdf

Nursing and Midwifery Council (2020) The NMC register 1 April 2019 – 31 March 2020.
<https://www.nmc.org.uk/globalassets/sitedocuments/nmc-register/march-2020/nmc-register-march-2020.pdf>

Oliver JM and Turton JR (1982) 'Is there a shortage of skilled labour?', *British Journal of Industrial Relations* 20(2), 195-200.

Orellana, K. (2014). Care home managers: A scoping review of evidence. London: School for Social care Research. <https://www.sscr.nihr.ac.uk/PDF/ScopingReviews/SR8.pdf>

Pegden, C. (2019) *How to solve the bricklayer skill crisis?*
https://www.designingbuildings.co.uk/wiki/How_to_solve_the_bricklayer_skill_crisis%3F

Penesis, I., Barnes Katersky, R., Kilpatrick, S., Symes, M. and León de la Barra, B.A. (2017) 'Reskilling the manufacturing workforce and developing capabilities for the future' in *Australasian Journal of Engineering Education* 22(1): 14-22.

People 1st (2017) The chef shortage: A solvable crisis? Understanding why we have a chef shortage and how it can be addressed. <https://people1st.co.uk/insight-opinion/latest-insights/21st-century-chef/report-download/>

Pijpers, R. (2010) 'International employment agencies and migrant flexiwork in an enlarged European Union' in *Journal of Ethnic and Migration Studies* 36(7): 1079-1097.

Purcell, J., Purcell, K. and Tailby S. (2004). "Temporary Work Agencies: Here Today, Gone Tomorrow?" *British Journal of Industrial Relations* 42(4): 705-725.

Pye Tait Consulting (2019) *2019 Horticulture Sector Skills Survey; A report for the Ornamental Horticulture Roundtable Group*. <https://www.nfuonline.com/nfu-online/sectors/horticulture/ornamentalthorticultureskillssurvey-report-finalreport-29oct19/>

RDI Associates Limited (2017) *A Forestry Skills Study for England and Wales*. Forestry Skills Forum. <https://www.rfs.org.uk/media/442100/forestry-skills-study-report-for-england-and-wales-2017.pdf>

Richards-Carpenter, N.N. (2016) 'The study of survival and resilience of the mature East Midlands textile and clothing industrial cluster in United Kingdom' in *Journal of International Scientific Publications* 10: 177-190

Riley, R., Billing, C., Bramley, G., Green, A., Hoole, C. Taylor, A. (2020) 'Professional & Business Services sector Creating further demand and growth outside London', BEIS Research Paper 2020/006.

Rodriguez, N. (2004). "'Workers wanted' - Employer recruitment of immigrant labor." *Work and Occupations* 31(4): 453-473.

Rolfe, H. and Hudson-Sharp, N. (2016) *The impact of free movement on the labour market: case studies of hospitality, food processing and construction*. NIESR. <https://www.niesr.ac.uk/sites/default/files/publications/Free%20movement%20-%20Final%20report.pdf>

Rolfe, H. (2017). "It's all about the Flex: Preference, Flexibility and Power in the Employment of EU Migrants in Low-Skilled Sectors." *Social Policy and Society* 16(4): 623-634.

Romanowski, P.S. (2016) "... and then I got my real job ..." *Career trajectories of Polish professionals during the Irish recession of 2008-2013*. MSc dissertation, Trinity College Dublin.

Schmidt, T. D. and P. S. Jensen (2012). "Social networks and regional recruitment of foreign labour: Firm recruitment methods and spatial sorting in Denmark." *Papers in Regional Science* 91(4): 795-821.

Scott, S. (2013a). "Migrant-local hiring queues in the UK Food Industry." *Population Space and Place* 19(5): 459-471.

Scott, S. (2013b). "Migration and the Employer Perspective: Pitfalls and Potentials for a Future Research Agenda." *Population Space and Place* 19(6): 703-713.

ScreenSkills and the Work Foundation (2019) *Annual ScreenSkills Assessment 2018-19*. ScreenSkills. <https://www.screenskills.com/media/2853/2019-08-16-annual-screenskills-assessment.pdf>

Shi, Y. H. and R. Handfield (2012). "Talent management issues for multinational logistics companies in China: observations from the field." *International Journal of Logistics-Research and Applications* 15(3): 163-179.

Skills for Care (2019) *The state of the adult social care sector and workforce in England*. September 2019. <https://www.skillsforcare.org.uk/adult-social-care-workforce-data/Workforce-intelligence/documents/State-of-the-adult-social-care-sector/State-of-Report-2019.pdf>

Smits, W. and T. Zwick (2004). "Why do business service firms employ fewer apprentices? A comparison between Germany and The Netherlands." *International Journal of Manpower* 25(1): 36-54.

SMMT (2012) *Skills, apprenticeships and employment in the UK automotive industry*. London, SMMT. <http://www.smmmt.co.uk/wpcontent/uploads/sites/2/SMMT-skills-apprenticeships-employment-in-UKautomotive.pdf>

Stanton, C.T. and Thomas C. (2019) *Missing Trade in Tasks: Employer Outsourcing in the Gig Economy*. CEP Discussion Papers. Centre for Economic Performance, LSE,

- Stenbacka, S. (2019). "Responsibilities, Caring Practices and Agriculture: Farmers' Perspectives on Recruitment and Employer-Employee Relationships." *Sociologia Ruralis* 59(2): 255-274.
- Stirling, A. (2015) Migrant Employment Outcomes in European Labour Markets, IPPR. https://www.ippr.org/files/publications/pdf/migrant-employment-outcomes-in-europe-labour-markets_April2015.pdf?noredirect=1
- Sumption, M. (2019). "Is Employer Sponsorship a Good Way to Manage Labour Migration? Implications for Post-Brexit Migration Policies." *National Institute Economic Review* 248(1): R28-R39.
- Tannock, S. (2013) Bad attitude? Migrant workers, meat processing work and the local unemployed in a peripheral region of the UK. *European Urban and Regional Studies* 22(4): 416–30.
- Traverse (2018) Evaluation of Introduction of Nursing Associates; Phase 1 report for Health Education England. <https://www.hee.nhs.uk/sites/default/files/documents/Phase%201%20OPM%20Evaluation%20Report%20%28002%29.pdf>
- Tutt, D., Pink, S. Dainty, A.R.J. and Gibb, A. (2013) 'Building networks to work: an ethnographic study of informal routes into the UK construction industry and pathways for migrant up-skilling' in *Construction Management and Economics* 31(10): 1025-1037.
- UKCES (2010) *Skills for Jobs: Today and Tomorrow - The National Strategic Skills Audit for England 2010 - Volume 1: Key Findings*. UK Commission for Employment and Skills.
- UKCES (2012) *Construction Building Services, Engineering and Planning: Sector Skills Assessment 2012*. UK Commission for Employment and Skills. http://www.citb.co.uk/documents/research/evidence-report-65-construction-building-services-ssa_tcm17-33271.pdf
- UKCES (2013) *Technology and Skills in the Aerospace and Automotive Industries*. Evidence Report 76. UK Commission for Employment and Skills. <http://webarchive.nationalarchives.gov.uk/20140108090250/http://www.ukces.org.uk/assets/ukces/docs/publications/evidence-report-76-aerospace-ndautomotive-final-report.pdf>
- UKCES (2014) *The Future of Work: Jobs and Skills in 2030*. Evidence Report 84. <https://www.gov.uk/government/publications/jobs-and-skills-in-2030>.
- University of Hertfordshire (2019) Platform Work in the UK 2016-2019, Statistical Services and Consultancy Unit, University of Hertfordshire and Hertfordshire Business School. <https://www.feps-europe.eu/attachments/publications/platform%20work%20in%20the%20uk%202016-2019%20v3-converted.pdf>
- van Ommeren, J. N. and Russo, G. (1997). 'Are vacancies hard to fill? An empirical investigation of the Dutch labour market', *Applied Economics*.29: 349–357.
- van Ours, J. C. and Ridder, G. (1991). 'Job requirements and the recruitment of new employees', *Economics Letters* 36: 213–218.
- Waldinger, R. and M.I. Lichter (2003) *How the Other Half Works: Immigration and the Social Organization of Labor* (Berkeley, Los Angeles and London, University of California Press).
- Warrian, P. (2019) *Measuring the Effectiveness of the Enhanced Welder Apprentice Training Initiative*. Ontario Centre for Workforce Innovation, Toronto, Ontario.

Watson, D., et al. (2006). "Employer Perceptions of Skills Deficiencies in the UK Labour Market: A Subregional Analysis." *Environment and Planning A* 38(9): 1753-1771.

Weller, S.A. (2017) Accounting for skill shortages? Migration and the Australian labour market', *Population, Space and Place* 23(2), 1-14.

Weyman, A. K., Roy, D. and Nolan, P. (2019). "One-way pendulum? Staff retention in the NHS: determining the relative salience of recognised drivers of early exit." *International Journal of Workplace Health Management* 13(1): 45-60.

Winterbotham, M., Vivian, D., Kik, G., Huntley Hewitt, J., Tweddle, M., Downing, C., Thomson, D., Morrice, N., & Stroud, S. (2018). *Employer Skills Survey 2017*. Department for Education.

Wright, C. F. and Constantin, A. (2020). "Why recruit temporary sponsored skilled migrants? A human capital theory analysis of employer motivations in Australia." *Australian Journal of Management*: 23. doi/10.1177/0312896219895061